JUNE 1961

The American City

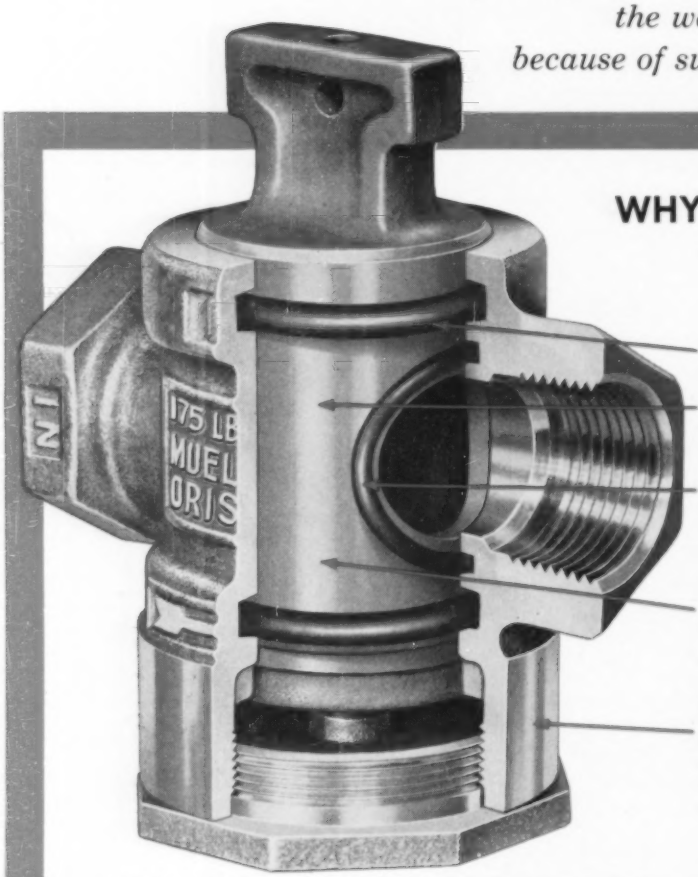
A Buttenheim Publication

The nation's waterworks officials and engineers gather this month at Detroit's new, outstanding Cobo Hall for the annual conference of The American Water Works Association. Mayor Lewis C. Miriani and Gerald Remus, General Manager, Department of Water Supply show their new civic center to AWWA's president-elect John Cramer and president C. F. Wertz. See page 3.

ORISEAL®

by MUELLER®

Introduced one year ago . . .
today recognized as the lifetime curb valve by
the water works industry
because of superior features!



WHY? *Lifetime easy turning action . . . lifetime positive sealing action!*

Top and Bottom O-rings—provide positive pressure sealing without mechanical means.

Straight, Balanced Pressure Plug—O-rings of equal size at top and bottom eliminate end thrust, contribute to turning ease.

Port O-ring—in a specially designed groove in the body provides maximum support for O-ring, preventing major cause of damage to O-ring. Seating action gives positive pressure sealing and long life.

"Teflon"* coated Plug—prevents "sticking" or "freezing", even after long periods of idleness. "Teflon", an inert material having a very slick surface, eliminates the necessity of periodic lubrication or maintenance.

Strong Cast Brass Body—of extra strength and with heavy-duty check lugs, enables the Oriseal body to withstand all normal operating and installation stresses.

TEST . . . an Oriseal Curb Valve in *your* system. Check the positive sealing and easy turning qualities that have made this the *lifetime* curb valve. See your Mueller representative or write for illustrated folder and test report on the Oriseal Curb Valve.

*Registered trademark of the DuPont Company.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

6258

JUNE 1961

The American City

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

A Buttenheim Publication

ADMINISTRATION AND GOVERNMENT
Our municipal notebook 28
Better drivers save cities money 112
Municipal public relations 159
A festival boosts city economy 179

FINANCE AND TAXATION
BUSINESS MACHINES AND SYSTEMS
Jackson's water billed sensimatically 103

STREET CONSTRUCTION AND MAINTENANCE
STREET CLEANING
City-utility coordinating council 19
Aluminum bridges 19
Street cleaning means flushing too 49
Alleys are clean in Santa Monica 49
Soil-cement street program 104
A thorough clean-up campaign 115
New streets 126

OUTDOOR LIGHTING
Prelude to municipal floodlighting 143
Mercuries modernize a palm-lined street 144
Cleveland's mall is now lighted 147
What is safe roadway lighting? 147
Tulip time is light-up time 151

SEWERAGE AND SEWAGE PURIFICATION
Mammoth pump discharges 466,900 gpm 31
A big bypass 31
Back in the business of sewage purification 106
Our future was at stake 199
Sewage plant features pre-fab lab 213

PURCHASING
Meet centralized municipal purchasing 195
Purchasing news 237

TRAFFIC CONTROL
Engineered lighting for a parking garage 124
Special attention to school safety 137
Parking a world-wide problem 139
Compact repair cart 139
400-car parking unit for 23% less 140
A few words on traffic engineering 140

REFUSE COLLECTION AND DISPOSAL
Faster and cleaner refuse collection 12
Contact cards—key to customer relations 12
Revolving grates make the difference 109
Novel refuse transfer station 122

PLANNING, ZONING, AND HOUSING
Don't "suburb" me in 111
Limited-purpose annexation 189
Nashville upgrades city's Capitol Hill 207

PUBLIC SAFETY
Fire dispatching in the metropolis 47
Fire-fighting scout cars 47
New times—better police 119

WATER SUPPLY AND TREATMENT
A boost in raw water for Detroit 25
Philadelphia spruces up its old water mains 25
Sea-water conversion plant contract awarded 25
New dimensions in water supply 99
The Union water system 116
Good records for distribution systems 128
Unusual but proved water-works features 165
Our future was at stake 199

AIR POLLUTION
Air pollution control news 36

POWER
Power installation brings savings 185

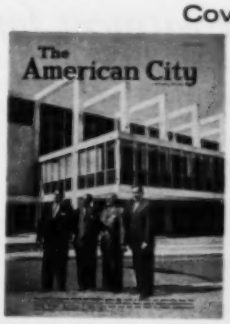
PARKS AND PLAYGROUNDS
Park shelters win award 33
Deer repellent protects parks 33
More swimmers per dollar 120
New York City's "salute to the seasons" 153

MISCELLANEOUS
Safety-conscious convention hall 173
Air-conditioning utility for Hartford project 210

DEPARTMENTS
Letters to the editor 5
Editorial 7
Free catalogs 52
Zoning and planning decisions 217
Legal notes 221
City managers 222
Conventions: when and where 225
Municipal and civic publications 231
Municipal bond market 235
About people 260
Professional service directory 263

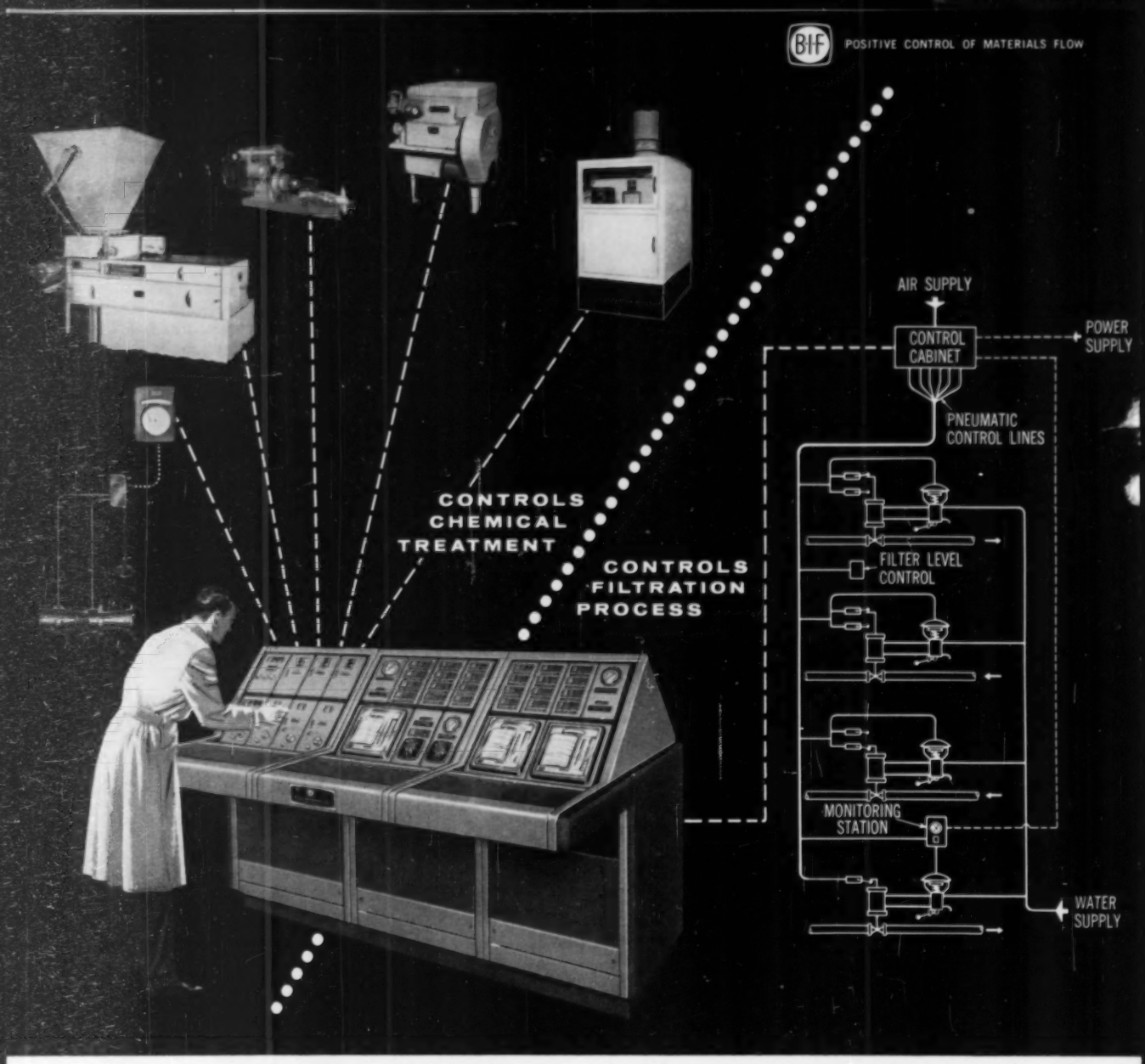
(For index to advertisers see page 275)

Cover Picture



These four civic and scientific leaders personally invite all waterworks men to attend the 1961 American Water Works Association Convention to be held at Cobo Hall, June 4-9. They are (l. to r.) AWWA's President-Elect John Cramer and President C. F. Wertz; the Honorable Lewis C. Miriani, Mayor of Detroit, and Gerald Remus, General Manager, Department of Water Supply, and Chairman, Convention Management Committee.

This month's issue carries an article (page 99) by Mr. Remus describing the city's water-supply service to the entire metropolitan area, a subject sensitive to today's vigorous urban growth. It also carries a story (page 173) describing some of the features of Cobo Hall, site of the convention. Cobo Hall forms a part of one of the nation's most interesting civic centers.



New advanced concept! **B-I-F** *laboratory control... more efficient water treatment for less money!*

ONE MAN CONTROL — From a single console in laboratory, the best qualified man (the plant chemist or chief operator) now has instant fingertip control over plant throughput, chemical additions, and filter backwash. This simplifies and improves process supervision . . . releases other manpower for more productive assignments.

MORE EFFICIENT FILTRATION — Centralized backwash control automatically initiates washing cycle . . . eliminates over or under washing and upset filter beds . . . allows key-man to make immediate, corrective adjustments over entire filtration and treatment process.

REDUCED COSTS — Overall plant construction costs reduced 15% to 20% by eliminating structures over filters. Chemical feeders located remotely for straight-line process flow . . . protects floc, improves settling, provides longer filter runs. Remote location of feeders also reduces maintenance cost by removing chemical dust problem from office and laboratory.

ANOTHER B-I-F 1st ! — Since the introduction of its Venturi Tube, 74 years ago, B-I-F has continuously developed new products and concepts in the municipal water treatment field. Today Laboratory Control makes your municipal bond dollar go farther by increasing filtration efficiency at lower cost.

REQUEST new Bulletin 2-1.20-1. Write **B-I-F Industries, Inc., 483 Harris Avenue, Providence 1, Rhode Island.**

B·I·F **Industries**

BUILDERS-PROVIDENCE • PROPORTIONEERS • OMEGA METERS • FEEDERS • CONTROLS / CONTINUOUS PROCESS ENGINEERING

See Laboratory Control at AWWA Convention
Cobo Hall — Booths 220-222-224
Detroit, Michigan—June 4-9, 1961

Volume 76 Number 6

The American City

WILLIAM S. FOSTER, *Editor*
ALDEN W. WELCH, *Research Editor*
ELROY F. SPITZER, *Engineering Editor*
RODNEY R. FLEMING, *Associate Editor*
SHEILA C. MALTON, *New Products Editor*
WILLIAM T. DULAC, *Production Manager*
WILLIAM DE R. TAAFFE, *Asst. Prod. Mgr.*

Editorial and Executive Offices:

470 PARK AVE. SOUTH, NEW YORK 16
MURRAY HILL 5-9250
EDGAR J. BUTTENHEIM
Chairman of the Board
DONALD V. BUTTENHEIM, *President*
GEORGE C. CONOVER, *Vice President*
EDGAR M. BUTTENHEIM, *Publisher*
ARTHUR B. BURGAN, *Assistant Publisher*
G. E. CARNEY, *Treasurer*

Sales Offices:

NEW YORK 16 • 470 PARK AVE. SOUTH
MURRAY HILL 5-9250
MYRON MACLEOD, *Advertising Manager*

CHICAGO 6 • 400 WEST MADISON ST.
FINANCIAL 6-4611
WARNER H. ROBINSON
TED K. ASHMOS

CLEVELAND 14 • 1814 SUPERIOR BLDG.
CHERRY 1-1755
FRED SCHENCK

LOOKOUT MOUNTAIN 8, TENN.
121 NORTH HERMITAGE
TAYLOR 1-2853
CURTIS R. BUTTENHEIM
Southern Sales Manager

LOS ANGELES 27 • 1870 HILLHURST AVE.
NORMANDY 5-5143
ALBERT T. MILLER, *Pacific Coast Mgr.*
JAMES F. MURPHY

THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature. Copyright, 1961, by Buttenheim Publishing Corporation, 470 Park Avenue South, New York 16, New York.

ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS	OVERVIEW	
Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

Sanitary Fill

I noted in THE AMERICAN CITY an article on the landfill method of refuse disposal ("The Sanitary Fill—How It Operates," Part I, February, p. 84). In the tabulation accompanying this article, two cities in Georgia were listed. I should like to report that Savannah has been using this method very successfully since 1954.

I would like to compliment you on the article in regard to attending the International Urban Congress in Tel Aviv.

MALCOLM MACLEAN
Mayor
Savannah, Georgia

EDITOR'S NOTE: A World Conference of Local Governments will be held this June 15-20 in Washington, D. C. It will be sponsored by the International Union of Local Authorities, the City of Washington and the American associations affiliated with IULA, such as the United States Conference of Mayors, the American Municipal Association and the International City Managers' Association.

Suburban Development

Your review of Josephs v. Town Board of Clarkstown in the April 1961 issue of THE AMERICAN CITY (Zoning and Planning Decisions, p. 165), was very interesting. A similar case occurred in Kentucky not long ago which we consider to be of considerable importance in this region. The case was never appealed.

W. G. ROESELER
Ladislas Segoe & Associates
Cincinnati 2, Ohio

Not the Largest Trickling Filter

In "Our Municipal Notebook" (March 1961, p. 9) we read that the trickling filters at the sewage treatment plant in El Paso, Texas, were the largest in the world.

We believe ours are the largest in the world and we have 12 of them as compared to Superintendent Street's four. Our trickling filters are 228 feet in diameter and contain 40,807 square feet of surface area. The surface area for the filters at El Paso is 37,994 square feet.

Our trickling filters are standard rate whereas El Paso's are high rate; therefore, our loading is not the same. Our filters normally operate at a rate of 3.33 million gallons per acre per day compared to the 12 million gallons per acre per day for El Paso. The average organic loading is 450 pounds per acre-foot per day with an average B.O.D. removal of 56%.

We are fortunate also that our plant is not bothered by the psychoda filter flies: however, we can flood our filters if necessary.

RAY A. TREWET, JR.
Office Manager
Central Weber Sewer Improvement District
Ogden, Utah

Sewer Siphon

MR. A. C. FREEMAN III
Water and Sewer Engineer
Norfolk, Virginia

It was with great interest that I recently read your article captioned, "Siphon System Cuts Sewerage Costs," (January 1961, p. 103).

Although I have run into the siphon-well system on and off over the years, I had yet to find an engineer who trusted it completely. Since you have an operating system based on new methods and equipment, we would be very interested in learning more about it.

Much of the land development along this portion of the Gulf Coast of Florida consists of "finger fills," extending into the water and the siphon system might adapt perfectly to sewering these "fingers."

If there are any plans and specifications for a representative installation available from your office we would greatly appreciate copies of them so that we could investigate the adaptability of the siphon system to our problems. Please bill us if there is any expense involved.

FRANCIS F. LEFEBER
C. A. Peterson, Inc.,
Consulting Engineers
Clearwater, Fla.

EDITOR'S NOTE: Mr. Freeman reports that data went forward promptly.

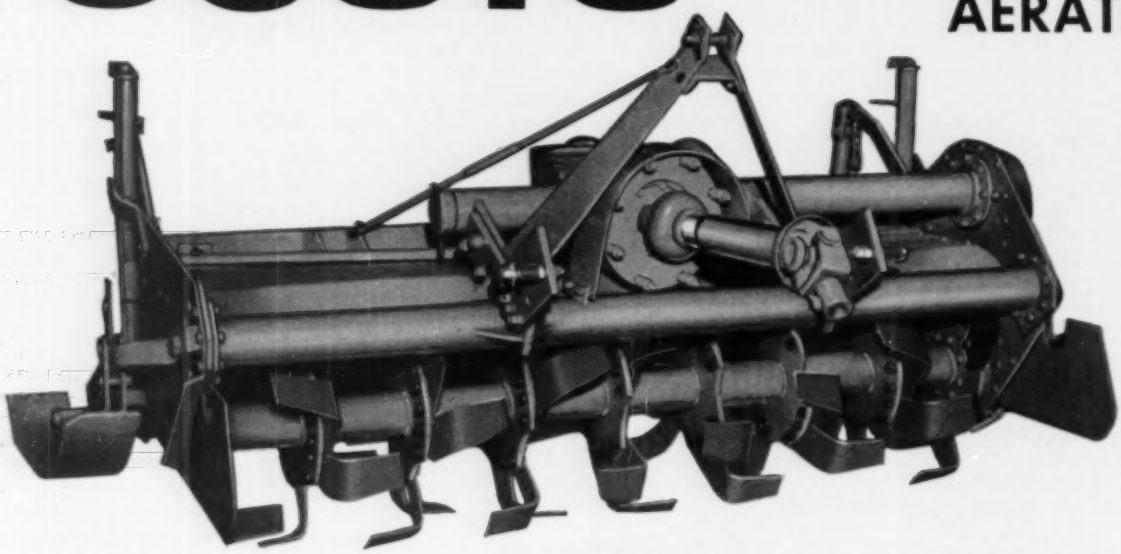
Christmas Lights

You might be interested in knowing that the story you carried in the December issue about the Christmas decorations on our Grandview Parkway (Christmas Lights in Traverse Bay, p. 114) has brought requests for information from many places throughout the country.

N. G. DAMOOSE
City Manager
Traverse City, Mich.

CUT COSTS

MIX
PULVERIZE
RECLAIM
AERATE



NEW *Mix-in-Place* ECONOMY

The *all new* Howard UNIMIX is the low cost answer for mixing and pulverizing jobs of the contractor, developer or local government. UNIMIX is a power take-off blender-pulverizer designed to work off modern tractor power in the 55-80 h.p. class . . . the same power package now used for back-hoe and front end loader work.

Why pay *three*, *four* or *five* times more for self-propelled, single purpose blending equipment only to have it at expensive rest when the jobs are completed?

The UNIMIX is versatile . . . Mix and blend; pulverize and reclaim; add moisture for better compaction; aerate soil to speed production; strengthen bases and sub-bases with any additive and clear land.

Write today for literature and demonstration facts.

UNIMIX 80 mounted on Massey-Ferguson 85 (butane) tractor. City street reclamation in Amarillo, Texas using dry lime.

HOWARD unimix

Industrial Division • HOWARD ROTAVATOR CO., INC. • Harvard 2, Illinois

Water-Supply Trends and Responsibilities

This month, the men responsible for the nation's public water supplies meet in Detroit for their annual AWWA conference. While the meeting promises to be constructive, it will probably attract less attention than it deserves across the nation. Even the Detroit press probably will give it only page-two treatment.

This is unfortunate. If one appraises the contributions to the advance and well being of our way of life, waterworks men rank high.

No one should doubt that their contribution is more substantial than those providing the literature of today.

No one should question that their contribution is greater than those offering art, painting and sculpture today.

The medical profession itself would readily agree that the man at the controls of a rapid-sand filter and supervising the application of chlorine to the water saves more lives than all the physicians in his community with scalpels in hand.

The people of this country tend to take their rights and privileges for granted. But one does not have to travel far from these shores to realize how much of the world's population cannot casually draw a glass of water from a tap and drink it without fear. And even fewer can have this water available to them all day, every day in the year, and in sufficient quantities to satisfy the needs of business and industry, provide protection from fire, irrigate lawns and take care of all the other needs of the homeowner.

Curiously enough, the feature of water supply that seems to be firing the imagination of the public is that of turning salt water to fresh. Current figures from the Federal Office of Saline Water in the Department of Interior show that conversion now costs somewhere around $1.75 to $2 per thousand gallons. If current demonstration plants are successful, the investigators hope to drop this cost to around $1 and some feel confident that it can be lowered to about 50 cents. Since this is a cost *before* distribution, the program at best provides a high-cost water, certainly nothing that would solve the need for agricultural irrigation in much of the water-short areas of the world.

We certainly do not wish to discourage these investigations but we do wish that they were placed in their proper perspective. The attention given them today reminds us somewhat of the rash of studies that broke out in the midwest during the 1930's trying to transform corn, then at 10 cents a bushel, into an alcohol to be mixed with gasoline. These investigators made studies and delivered reports, even though they knew full well that other waste products would do the job better.

We see rather startling statements of water needs for the future, indicating that we can expect much of the nation to become water-short before long. The one weakness in these forecasts is that they are based on the relatively wasteful water requirements of the past. AWWA's President-Elect John W. Cramer recently told the American Society of Planning Officials that industrial-process engineers have reduced water requirements along these lines:

	Gallons of water needed Per ton produced	
	Formerly	Today
Steel	55,000	3,000
Paper pulp	45,000	9,000
Newsprint	26,000	6,000
Cannery products	2,500	1,200

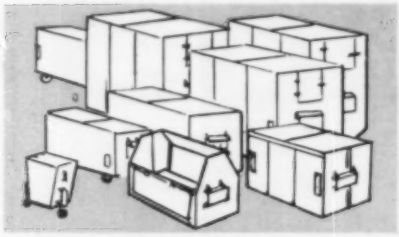
Mr. Cramer foresees more of the same sort of economies in the future. If agriculture, the nation's biggest user of water, can learn to be equally resourceful, the water-supply problem would not appear nearly so difficult.

One further interesting development in water supply research curiously links soft water with heart-disease strokes. U. S. medical investigators recently issued a cautiously worded report in the *Journal of the American Medical Association* to this effect and recently British researchers confirmed the findings.

This presents the rather amusing possibility that the calcium-carbonate content of certain waters might be increased to reduce the risk of deaths from cardiovascular disease in these soft-water areas. This would provide opportunity for those determined and pugnacious fighters of fluoridation to again issue a call to arms denouncing the measure as a danger to health, a denial of constitutional rights, and a subversive plot to undermine the strength of the nation.

However, currently the investigators have not named soft water as a cause of this disease. They have only noted that the two have occurred together and that the soft water may have some influence.

America's Leading Line of Mechanized



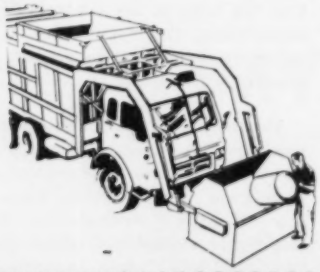
DUMPMASTER Containers are available with or without casters, ranging from ½ through 8 cu. yd. capacity.

THREE SIZES AVAILABLE

The DUMPMASTER is available in three sizes — 20, 24 and 30 cu. yd. bodies. Safe clearance arms that clear the cab doors are available in capacities of 1,500, 3,000 and 6,000 pounds.

This safe, efficient, self-loading packer is equally at home on containerization or manual collection routes.

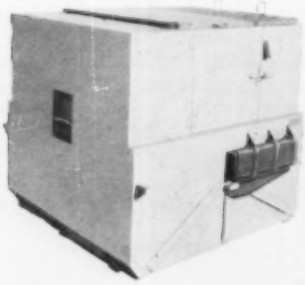
FREE BROCHURE
Catalog Section 10



DEMPSTER DUMPMASTER®

The SUPER DEMPSTER-DUMPMASTER

The SUPER-DUMPMASTER handles converted DUMPSTER Containers up to 12 cu. yds., and all DUMPMASTER Containers through 12 cu. yds. Owners of DUMPSTER equipment may secure low-investment conversion kits to adapt their old containers for use with this new system.

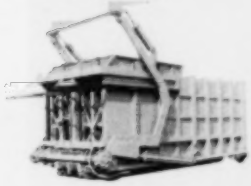


FREE BROCHURE
6073-A

Refuse Storage and Collection Equipment

DEMPSTER DINOSAUR®

With its tilting skid frame and hydraulic lifting action, the DINOSAUR handles loads limited only by the capacity of the truck. Containers handled range from 8 cu. yds. to 40 cu. yds. and over. It is ideal for transfer-station use and for handling ash in incinerator operations.



The DEMPSTER-DINOMASTER used with Dinosaur

FREE BROCHURE
Catalog Section 12

DINOSAUR picks up DINOMASTER body preparatory to leaving on refuse pick-up route.

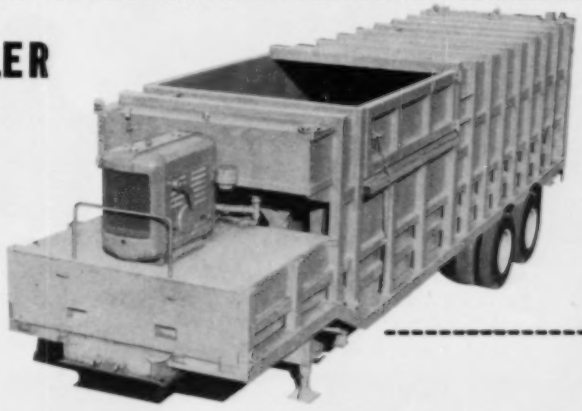
DINOMASTER engages loaded container and begins emptying cycle.

Dinosaur picks up 40 yd. refuse container

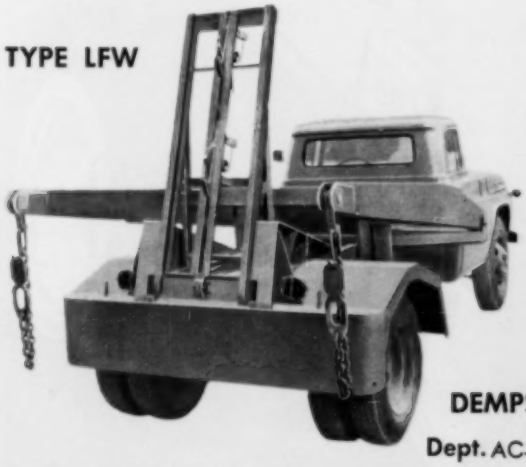
Thirty yard refuse container being loaded by GRD 304-F2

DEMPSTER Compaction TRAILER

This DEMPSTER development is providing highly efficient transfer-station performance in major cities from coast to coast. It can be used with a GRD for ground loading, or ramp-loaded by conventional packers and DEMPSTER-DUMPSTER LFW models. Sizes available are 42 and 53 cu. yd. capacity bodies, which carry the equivalent of up to 200 cu. yds. of uncompacted material on each trip to the disposal area.



TYPE LFW



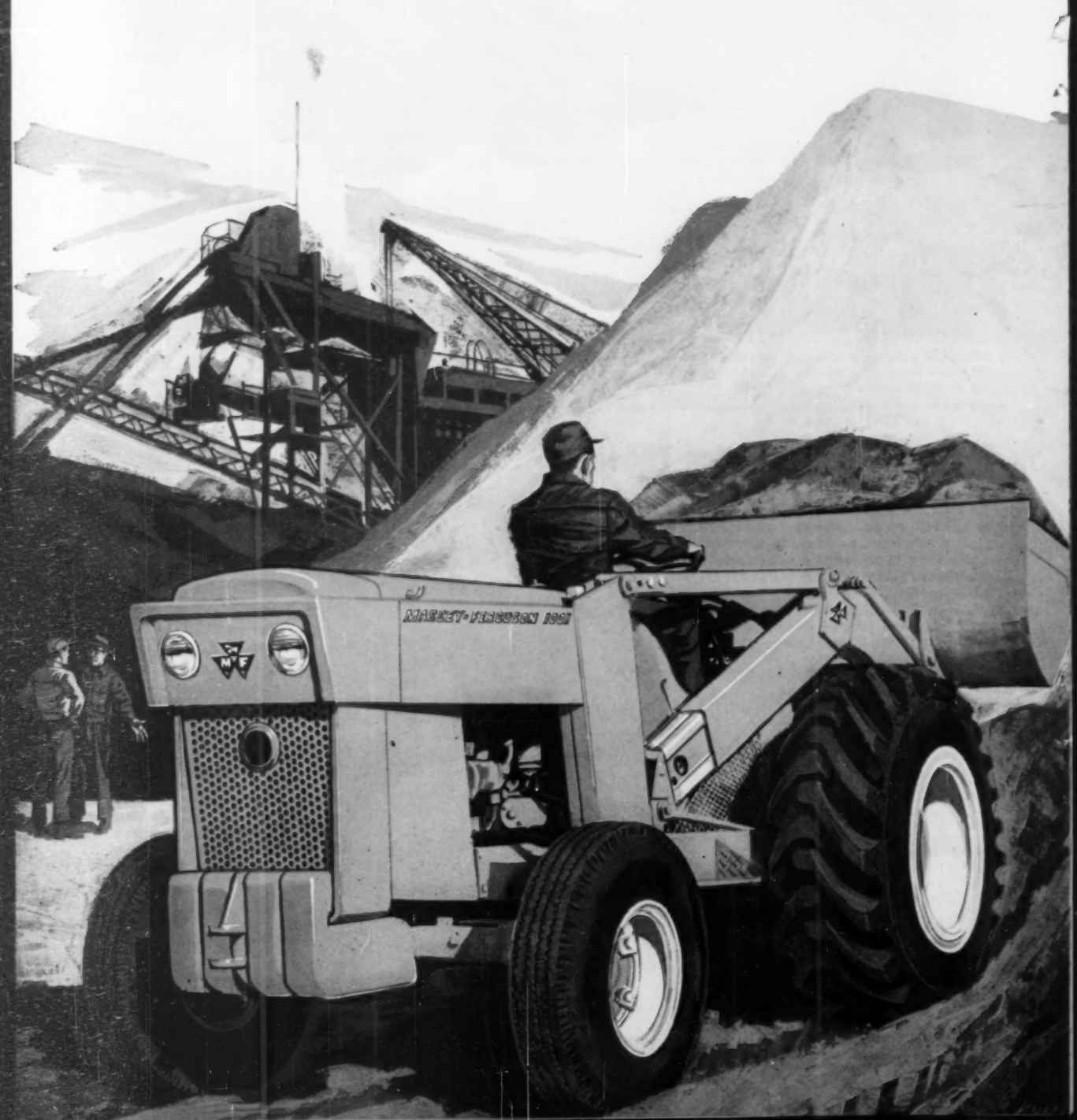
Still highly popular and efficient for short-haul container service is the DEMPSTER - DUMPSTER Type LFW. One man, the driver, and one DUMPSTER can handle a large number of big-capacity containers each day. Seven basic models are available, with payloads ranging from 6,000 to 38,000 lbs.

DEMPSTER BROTHERS
Inc.
Dept. AC-6 Knoxville 17, Tenn.

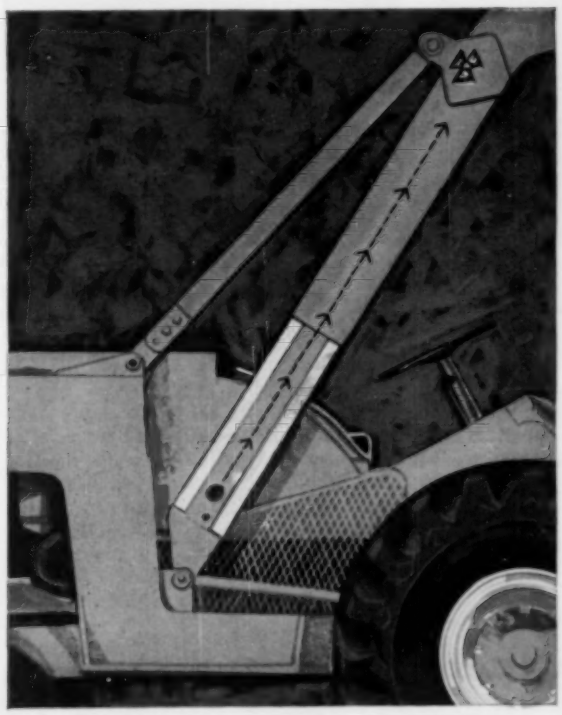
ALL A PART OF THE
DEMPSTER DUMPSTER® SYSTEMS

When the world's largest tractor manufacturer...Massey-Ferguson...designs Industrial Equipment like this Shovel-Loader, years of advanced engineering know-how pay off for you. Exclusive features like "telescopic reach" (see opposite page) make your operation faster, more precise, more efficient. The result is a Shovel-Loader that outproduces and outperforms all others...with maximum capacity, unlimited versatility.

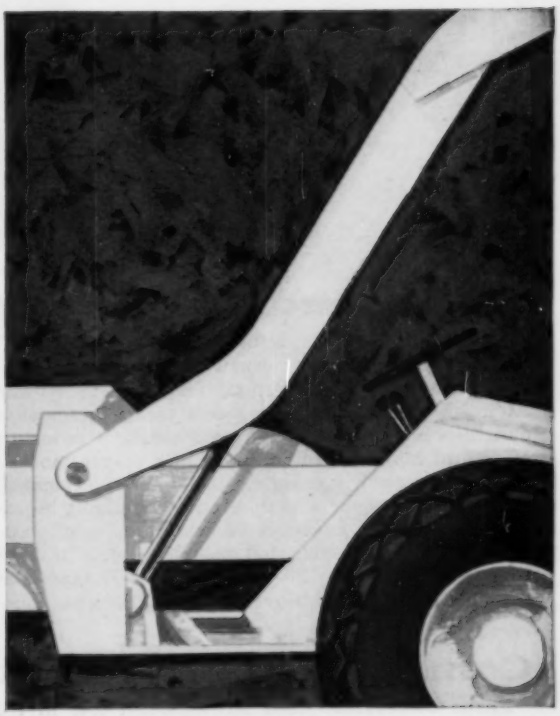
MASSEY FERGUSON INDUSTRIAL EQUIPMENT



Engineered to outshovel... outload them all!



M-F Shovel-Loader



Ordinary Shovel-Loader

Massey-Ferguson's Shovel-Loader performs as no ordinary shovel-loader can. Here's why: M-F lift arms—with exclusive "telescopic reach"—raise 5000-lb. loads to 10 foot, 4 inch clearance height . . . faster. No loss of lift power either . . . even when load nears top of lift cycle. With low draft line of arms—swinging from loader pivot points below the level of the tractor axle—loading thrust is increased to permit "close-in" loading. Compare this with ordinary shovel-loaders. They have high pivot points and inflexible lift arms. Consequently, close-in bucket loading is hampered and loss of lift power results. So before you buy . . . check the features! You'll see why Massey-Ferguson's Shovel-Loader is designed to give you maximum pryout capacity . . . cleaner dumping . . . better load distribution.

Some other things you'll want to know: Massey-Ferguson Shovel-Loaders develop 9300-lb. pryout capacity . . . have 36° rollback at ground level. Power steering is standard equipment. They handle a variety of quick-change attachments for dozens of specialized jobs. And Instant Reverse and torque converter makes maneuverability and agility the rule—not the exception.

NEW KIND OF ENGINEERED DEPENDABILITY PAYS OFF IN PROFITS!

Massey-Ferguson Industrial Division
12601 Southfield Road, Detroit 32, Michigan

SEE YOUR NEAR-BY MASSEY-FERGUSON DEALER TODAY

With proper placement of the large containers the driver can engage the hoisting gear without leaving the cab, making commercial collections a one-man operation.

Faster and Cleaner Refuse Collection

Bigness pays off in refuse collection if properly applied. In our case it means fewer trips to the disposal site, cleaner collection, and less manpower. Although it is too early to assess the program on a dollars-and-cents basis, we are showing a reduction of several hundred dollars in slightly over a month's time with our new system of collection in the commercial district, plus our schools and a few outlying industrial plants which have a large concentration of trash.

The changeover consisted of replacing a 13-yard collection unit with a 24-yard Dempster-Dumpmaster mounted on a GMC cab-over-engine chassis, and purchasing 67 enclosed steel containers varying in capacity from two to eight cubic yards. This was done at a cost of approximately $36,000.

We use the truck four nights per week in the commercial district and daily in residential collection. The night operation requires only a driver while the day operation in the residential area requires the help of two laborers to unload the household refuse containers into a special container carried by the truck.

MAURICE CONN
Commissioner of Streets and Public Property
Bristol, Tenn.

Contact Cards — Key to Customer Relations

Public cooperation plays an important role in the success of our new garbage and trash collection service. New vehicles and the location of our sanitary landfill close to town complete the picture. The net result is better service at lower cost for Grand Junction, Colo., residents.

After studying the situation late last year, we changed disposal procedures, discontinued a garbage-hauling contract costing us $18,000 a year, and instituted combined garbage and trash collection on a weekly basis. Previously alley pick-up (three quarters of the city) was provided twice a week along with weekly front pick-up.

To do this and still maintain the possibility of lowering collection fees (residences pay a flat $1.25 a month) we needed the people's help and asked for it in the following manner.

- **Notices in the paper.**
- **A red, illustrated card, 9 by 11 inches in size, hooked over all the containers.**
- **A series of illustrated cards, 5½ by 8½ inches in size, each in a different color, calling attention to ways of helping or corrections required. The cards are labeled "Overload Notice," "Please Wrap Your Garbage," "Please Help Keep Costs Down and Service Up by Following Sanitation Regulations," and "Please Empty Your Own Ashpit."**

These are slipped over the edge of containers belonging to the offending customer.

These contact cards are the key to good customer relations.

The city does provide monthly ashpit-cleaning service for an additional $1-a-month charge and will also pick up extra large amounts of material or special items upon arrangement and for a fee.

Another big item toward providing faster service is the location of sanitary-landfill operations near town. We are filling in land to eliminate stagnant ponds of water near the Colorado River. The land will be reclaimed for future industrial use. Refuse is covered daily and the operation has been cited by the County and State Health Departments as one of the most needed sanitation improvements in the area.

Last but not least is the all important item of good equipment. We now operate five new collection trucks, two Heil Colectomatics, one 16-yard and one 20-yard mounted on new G.M.C. chassis, two Gar Wood 16-yard packers on Ford chassis, and one 17-yard Leach Packmaster on an International chassis. The lower loading heights and tighter packing of these units speed up collection greatly.

JOE LACY
City Manager

Get one of these checks–direct from MASSEY-FERGUSON!

Up to $150.00 cash for buying a Massey-Ferguson Industrial Tractor now!

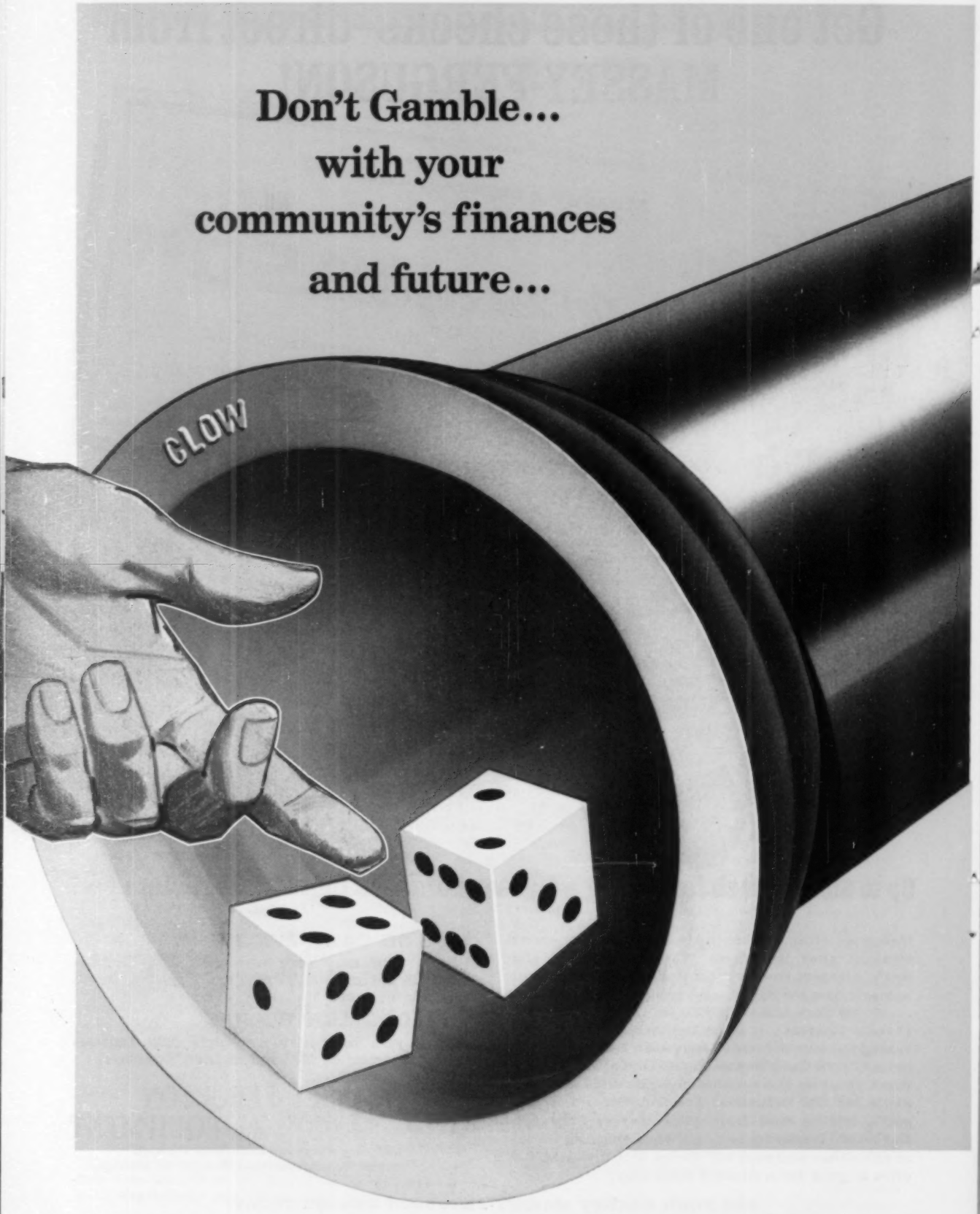
Here's an offer you can't afford to pass up—sent straight your way from Massey-Ferguson, the world's largest tractor manufacturer. First, if you buy any new MF 204 Tractor with Instant Reverse . . . or 204 Fork Lift with 5000-lb. lift-capacity and Instant Reverse . . . or 65 Industrial Tractor featuring the world-famous Ferguson System, you'll get a $150.00 Cash Bonus check. Or a $100.00 check when you buy the economical, powerful and versatile MF 202 Industrial Tractor. Second, you'll get a terrific deal from your Massey-Ferguson Industrial Dealer including a whopping-big trade-in allowance and easy MF terms. Don't wait! This offer is good for a limited time only.

$150.00 CASH BONUS
When you buy any new MF 204 Industrial Tractor, 204 Fork Lift Tractor or 65 Utility Tractor

$100.00 CASH BONUS
When you buy any new MF 202 Industrial Tractor or 202 Fork Lift Tractor

MASSEY-FERGUSON
INDUSTRIAL EQUIPMENT
Massey-Ferguson Industrial Division
12601 Southfield Road, Detroit 32, Michigan

SEE YOUR NEARBY MASSEY-FERGUSON DEALER TODAY!


Don't Gamble...
with your
community's finances
and future...
GLOW

you KNOW
CLOW
cast iron pipe
will last over 100 years

Can you risk the high cost of buying substitutes "at a price"? CLOW cast iron pipe assures dependable water service...now and for the future. The first cost is the *last* cost. Only tough, rugged cast iron pipe combines proven long life, trouble-free service, and sustained high-carrying capacity at low cost. Can you afford to buy less? Before you buy, let us prove to you that CLOW cast iron pipe is the best value for your job.

CLOW manufactures a complete line of cast iron pipe, fittings, valves, fire hydrants and piping specialties for every waterworks installation. Write or call today.

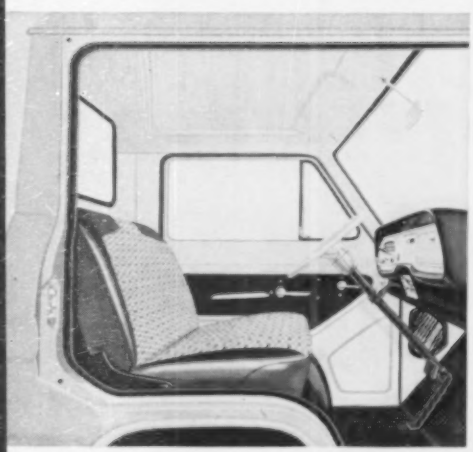
CLOW CAST IRON PIPE

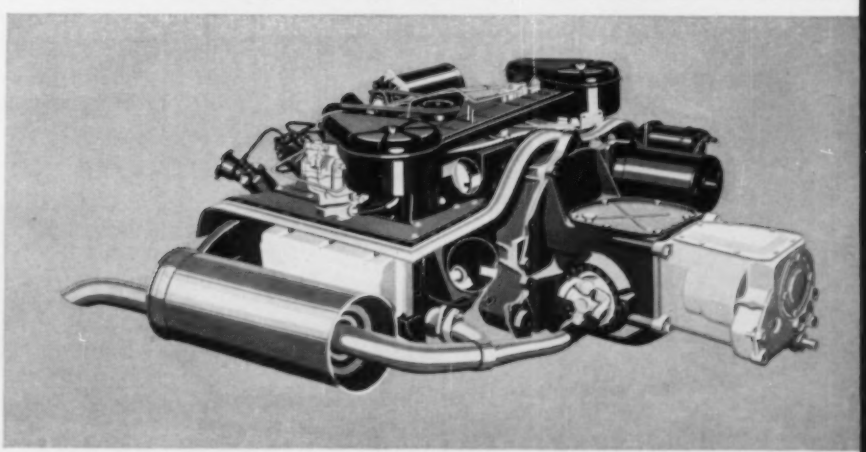
JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

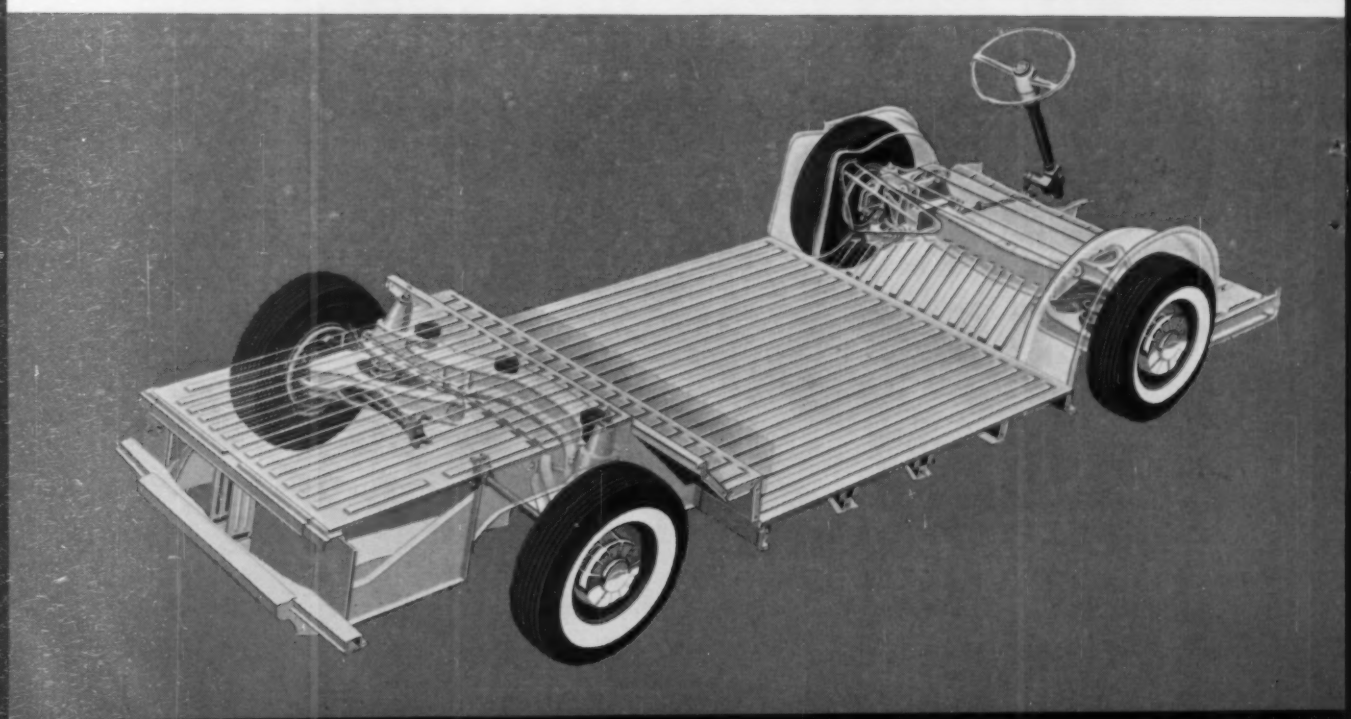
Subsidiaries:
Eddy Valve Company, Waterford, N.Y.
Iowa Valve Company, Oskaloosa, Iowa

Clow Cast Iron Pipe Plants are located at
BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO

STOP
FOR
PEDESTRIANS







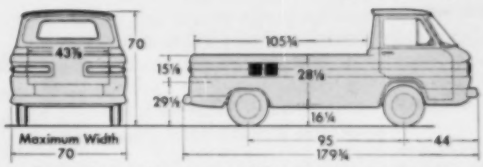
THERE'S A DOLLAR-SAVING DIFFERENCE IN CORVAIR 95!

We mean there's a whopping difference—the kind that puts a truck in a class by itself. You can see it, too, especially if you know where to look. In Corvair 95 design details, for instance—the things that tell you a truck is built with care throughout, crafted in a quality way that means more miles before trade-in and less expense along the route. We mean it's the kind of difference that will pay off in dollars every day on your job!

Power team and driver compartment—evidence of extra efficiency. Tucked neatly between the rear wheels is the most practical truck-design idea in years—the Corvair 95 *Unipack power team.* Engine, transmission and rear axle are combined in one compact, *durable* unit. Power is delivered to the rear wheels by the shortest, most efficient route. This unitized power train design (including an engine that measures only 17" high) takes up less space—allows for plenty of cargo room in the big pickup body. The engine itself is something new in save-as-you-go power: a tough aluminum air-cooled 6 that moves your loads briskly on a minimum of gas. Up front, the big difference in Corvair 95 design is apparent in a cab that gives you bird's-eye visibility (no hood to limit vision), plenty of leg room, and a comfortable full-width foam cushioned seat (standard equipment).

Exclusive side loading ramp—Rampside models. Wide, ruggedly built side gate drops down to form convenient ramp for easy no-lift loading.

Engine access door speeds up servicing—gives fast access to oil filler, distributor, coil, generator and oil filter.



Dimensions point up new utility. Note long cargo area, short wheelbase, low 29½-inch rear loading height.

Corvair 95's stay-together build goes unchallenged in this field.

Super-rigid frame-floor assembly outperforms combination of separate frame and body floor. Eliminates a major part of a separate frame's weight.

Heavy-gauge crossmembers strengthen the underbody; form rigid foundation for front and rear suspensions—another reason for long truck life.

Friction-free coil springs at all four wheels assure top load-carrying capacity and *smooth* ride.

Precision Ball-Gear steering cuts friction (and wear) to a minimum; gives safe, easy steering.

Unitized body construction means maximum strength with minimum weight—for bigger cargoes.

There are literally scores of reasons why no other truck of this type can do so much to put you dollars ahead. There's a cargo area that's almost 9 feet long . . . with balanced weight distribution that enables a Rampside or Loadside pickup to carry up to 1,900 lbs. of payload with a 4,600-lb. GVW. There's a short 95-inch wheelbase for nimble maneuvering; deep-biting traction with engine weight in the rear; handsome styling that's good for business.

That's Corvair 95's special brand of *efficiency,* ready to give you bigger profit hauling in the years ahead. See for yourself at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

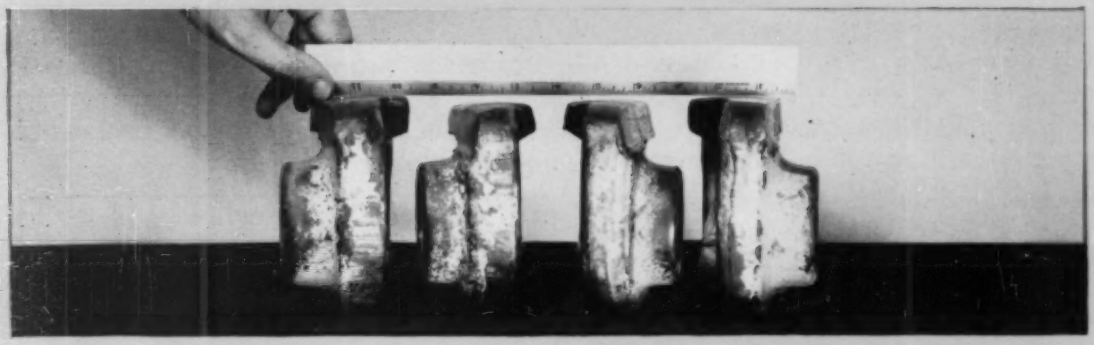
1961 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

Special Report to Users of Caterpillar Equipment:

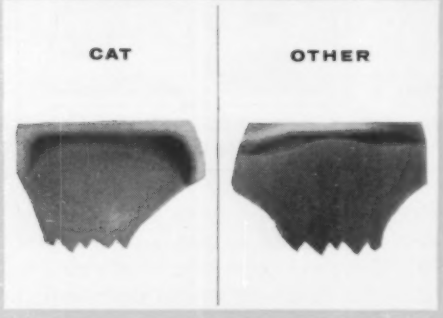
CAT CATERPILLAR

WHAT YOU DON'T SEE CAN HURT YOU

You can buy a lot of parts that *look* like genuine Caterpillar parts. Some may be cheaper initially. But they are as different as night and day when you get them in service.



Take these links, for example. They all *looked* identical when new. But see what has happened after 2000 hours on the same D8 Tractor! The two links in the center, a popular brand with induction-hardened rails, cost about 9% less than Caterpillar links originally, but showed about *50%* more wear.



The extra service you can expect from the Cat links can be seen and compared with other brands. Here are actual photos of etched cross sections of *production* links made by Caterpillar and the other manufacturer. The light areas at top show case depth and pattern of wear-resistant rail material resulting from heat treatment. See the deep, uniform wear case on top *and sides* of the Cat part? It's as hard as a good ball-peen hammer head. But in the other brand, the wear case varies both in depth and hardness . . . that's the reason why after 2000 hours on a D8 the Cat-made links had worn 50% less.

Investigate and you will find superiorities for every undercarriage component built by Caterpillar. This extra quality—though it sometimes costs a little more initially—pays off by delivering *extra* trouble-free working hours. That's why genuine Caterpillar parts cost you less per hour than other brands.

And when it's time to replace or rebuild your tractor undercarriage, see your Caterpillar Dealer. He is an undercarriage specialist with modern facilities to back him up. Get the full story on his many money-saving options and recommendations *tailored to your job conditions.* Truly CUSTOM TRACK SERVICE, designed to save you money . . . and offered only by your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Utilities co-operate as employees of the Indianapolis Power and Light Company remove poles prior to a street improvement

City-Utility Coordinating Council

The annoyance of breaking up a freshly paved street to lay a new water, sewer, or telephone line will become a thing of the past in Indianapolis. This city's Public Works Coordinating Council expects to reduce construction confusion, facilitate planning and promote improved public relations. The voluntary group consists of representatives from 21 different utilities and governmental departments who meet on the first Wednesday of alternate months to discuss the avoidance of and the solution to construction problems—past, present and future.

All participants agree that the bi-monthly meetings promote a better understanding of each other's problems. The advance notice of projects scheduled for construction eliminates many split-second, hair-line decisions which construction representatives formerly made on the job, often without adequate background facts. We, the utilities involved and the public as a whole all benefit from this free exchange of advance information. With proper planning we now arrange to schedule work in congested areas on weekends, keep more lanes on arterial streets open during rush hours, ban parking adjacent to construction projects and provide better service and safety for all.

Two construction problems of entirely different types triggered the formation of the council. Plumbers' cuts for service lines had closed several lanes on arterial streets during evening and morning rush hours. Investigation indicated that no one was really trying to prevent this situation. Correction consisted of scheduling the inspections and regulating the openings by tightening the permit procedure so that the plumbers would either fill the trenches or cover them with steel plates prior to heavy traffic demands. In another case the Indianapolis Water Company had let a contract for a new water main; the contract included the replacement of the curb and a portion of the surfacing on a street which was scheduled to be widened. Negotiations with the contractor resulted in $32,000 saving by deleting the street work from the contract. The water company then transferred this amount to the Department of Public Works, with the result that the city got a $54,000 job rather than an $86,000 expenditure with a portion of the work being duplicated.

Noting these two cases, we decided to investigate the possible savings in time, effort and money by coordinating all construction. Our findings indicated the need for some common meeting ground for all organizations affected. Consequently, we called a preliminary meeting last September. Utility and public agency representatives agreed that they would discuss future construction plans and eliminate problems of conflict before they occur rather than after damage results.

Aside from the direct result of better coordination on specific jobs, a by-product benefit has been the first-name relationship established through association on the committee. City and utility officials now know whom to consult in other organizations and have more sympathy toward each other's problems.

ELLSWORTH MAXWELL
Commissioner of Public Works
Indianapolis, Ind.

Aluminum Bridges

Two aluminum bridges now being erected in Amityville, N. Y., represent the first ever placed in service utilizing an aircraft-type, stressed-sheet design. Named the Kaiser Aluminum Unistress Bridge, it is technically described as a semi-monocoque structure composed of triangular-shaped beams bolted together edge to edge to form a roadway base. Each beam is a cell, shop-fabricated from aluminum sheet and stiffened inside with aluminum extrusions for maximum strength per pound of metal used. An aluminum sheet forming the roadway base eliminates the need for concrete form work. Standard concrete paving, poured directly on the deck, works integrally with the aluminum components.

Other features are: the components lend themselves to mass production, are easily transported, and, because of lockbolt construction, can be assembled in a relatively short period of time. ◄◄

Conservation Officer checking a Wood Duck box on a municipal reservoir—Photo by Ted Croner

Reflections on a reservoir

Here's how communities get fresh water and how commercial banks help

"Till taught by pain," said the poet, "men really know not what good water's worth."

But this much is certain.

Where water flows pure and plentiful all nature thrives. And most importantly man can drink his fill without fear.

That's why reservoirs are so important to all of us, and how to finance them is one of a community's most vital decisions.

Most often nowadays a new municipal water supply is created on a pay-as-you-go basis. Revenue bonds are issued to raise the money for construction. Over a period of years bondholders are paid interest and the bonds are retired out of money collected from private citizens and businesses according to the amount of water they use.

Perhaps the most important function in this method of financing is the trusteeship vested in commercial banks for the bonds issued by the community. And here's why.

The commercial bank's trust specialists take on the exacting task of making certain that the community water authority meets many of its obligations to its bondholders. By so protecting the bondholder, the banker helps assure the community of a constant supply of fresh and pure water.

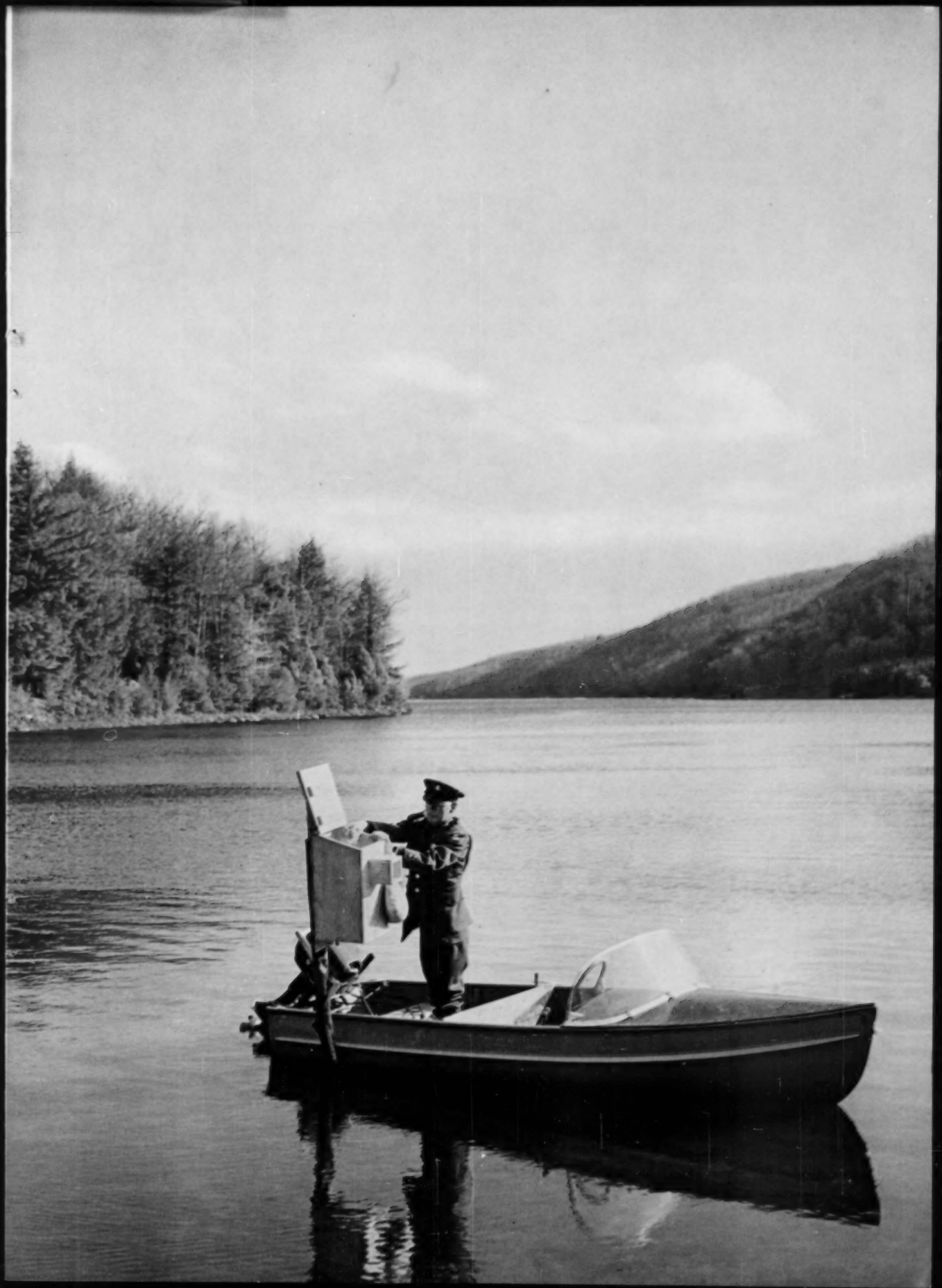
The Chase Manhattan Bank, a leading trustee for revenue bonds, is always ready to serve the needs of any state, county or community in cooperation with its local bankers.

THE CHASE MANHATTAN BANK

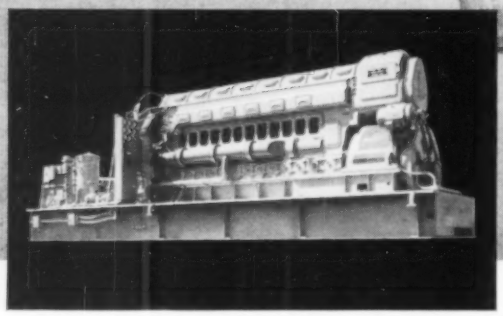
CHARTERED IN 1799

1 Chase Manhattan Plaza, New York 15, New York

Member Federal Deposit Insurance Corporation



NOW! FULL POWER IS 15 SECONDS FAST!



Solve peak-load and standby problems! F-M's exclusive O-P Diesel Generating Units provide *full* power in 15 short seconds . . . *from a cold start!* They need no spinning reserve. Use no power till you use them! The reason? Our exclusive O-P (Opposed-Piston) design. Two pistons in one cylinder function from a *single* combustion. This minimizes *vibration* . . . produces fine *balance, smooth* power to peak the generator—in just 15 seconds! F-M Opposed-Piston Diesel Generating Units are available with automatic or manual controls. Produce up to 2500 kw per unit. They may be linked in multiple units for peaking, standby duty . . . or dead load pickup! You can't buy better—or more economically.

For full details or custom specifications, write today to: **Mr. S. K. Howard; Diesel Division; Fairbanks, Morse & Co.; Beloit, Wisconsin.**

FAIRBANKS MORSE

A MAJOR INDUSTRIAL COMPONENT OF

FAIRBANKS WHITNEY

FOUR STEPS to better secondary roads with COLUMBIA CALCIUM CHLORIDE

1. PREPARE. Make a master plan to cover future growth of your communities. Determine the eventual use of each road, and bring the roadway width, alignment and drainage to these standards.

2. SHAPE UP. Place the first course of stabilized aggregate wearing surface. Columbia Calcium Chloride provides dust control while helping to hold the fines moist and keeping the aggregate in place.

3. BUILD UP. As budget and traffic load permit, add the dense graded base which will provide the support needed for future traffic needs. Again Columbia Calcium Chloride contributes its moisture-holding and binding properties to a better driving surface, proper compaction, and protection against loss of fines or ravelling of top surface material.

4. FINISH UP. When you are ready to add hard paving, you'll find the aggregate base needs a minimum of reshaping or additions of material when Columbia Calcium Chloride has been used properly. The final job is superior, because of compaction and strength of the base.

By following this progressive plan, you can give more people better roads for more of the time, and still keep on budget. Residents appreciate knowing what improvements are coming, and they like the safer, more comfortable driving on dust-free aggregate roads treated with Columbia Calcium Chloride. Send for the booklet, "A Program for Progressive Improvement of Secondary Roads." It gives all the details.

columbia | southern chemicals
CHEMICAL DIVISION
PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER PITTSBURGH 22, PENNSYLVANIA
DISTRICT OFFICES: Boston · Charlotte · Chicago · Cincinnati · Cleveland
Dallas · Houston · Minneapolis · New Orleans · New York · Philadelphia
Pittsburgh · San Francisco · St. Louis · IN CANADA: Standard Chemical Limited

Columbia Calcium Chloride
One Gateway Center
Pittsburgh 22, Pennsylvania

Please send me a copy of "A Program for PROGRESSIVE IMPROVEMENT of Secondary Roads."

Name_____

Title_____ Organization_____

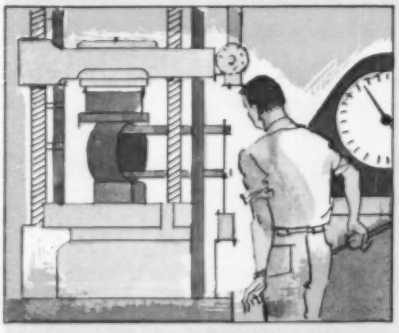
Address_____

City_____ Zone____ State_____

PIPE FACTS

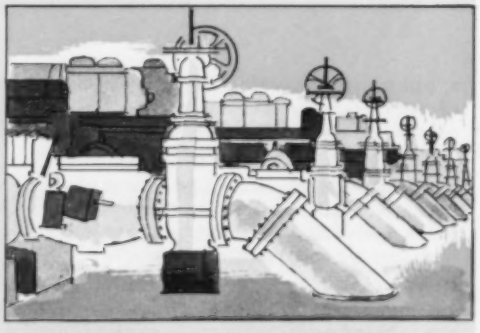
In a recent survey, ten times as many contractors claimed more difficulty (breakage during installation) with composition pipe than with cast iron pipe.

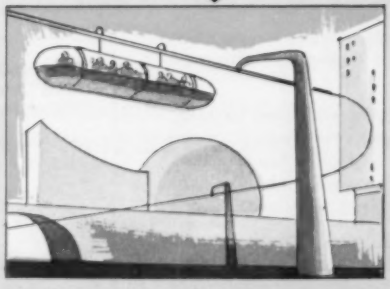
DO YOU KNOW that today's modern fire engines can pump up to 1,500 gallons of water per minute? When fire strikes, it is important that underground mains deliver the volume of water for which they were designed. AMERICAN Enamelined cast iron pipe assures high flow capacity, guaranteeing Class 150 6" pipe to have up to 13% additional carrying capacity over composition pipe of similar size and class.



DO YOU KNOW that AMERICAN cast iron pipe products are rigidly tested for quality and strength before shipment? In certified ring crushing tests—which indicate pipe's ability to take rugged punishment during installation and in service—samples of AMERICAN cast iron pipe withstood a crushing load of over 18,000 pounds! Similar samples of composition pipe failed at 6,480 pounds.

DO YOU KNOW that many thousands of miles of cast iron pipe installed this year will still be serving 100 years hence? No science fiction... this is a fact! In 100 cities in America, cast iron pipe has been in service for over 100 years... and some European cities boast a record of over 200 years use.

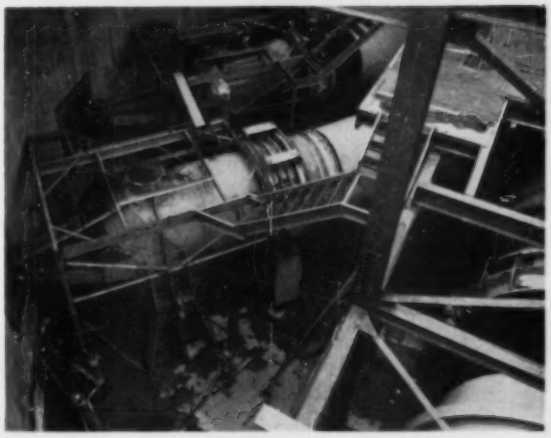




DO YOU KNOW that water to cool the launching pads at a U. S. Air Force missile test center is conveyed through large diameter AMERICAN cast iron supply lines? And that it is pumped through high pressure pumping stations equipped with AMERICAN flanged pipe and fittings? AMERICAN offers the most complete line of cast iron piping to meet water, sewage treatment and industrial plant service. Let us recommend the exact piping for your application.

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM ALABAMA

A Boost in Raw Water For Detroit



This construction shows the location of two of the 60-inch pumps; the other two pumps are located on the opposite side of the manifold passing through the station.

Four giant pumps will increase raw-water delivery to Detroit's Springwells and Northeast water treatment plants. The new booster pumping station is designed to boost flow in the existing tunnels presently supplying screened water from the Detroit River to the plants by gravity.

Each of the Allis-Chalmers 60-inch adjustable-blade pumps has a rated capacity of 371.5 cubic feet per second (about 250 mgd) at 52-foot head with a head range from 0 to 52 feet. A 3,500-hp, 400-rpm electric motor drives each pump. Two separate sources of electrical supply with a double-bus, double-breaker arrangement serve the station.

The installation includes a 72-inch AWWA 50-16 rubber-seated butterfly valve on the suction line of each pump and a 90-inch 50-16 rubber-seated butterfly valve as a pump check. The check valves have hydraulic operators while the 72-inch valves on the suction line have manual operators. The pump manifold contains a 114-inch babbitt-seated Dow valve with fabricated steel body and a hydraulic operator that provides tight closure in both directions. Flow bypasses the pumps when this valve is open and enters the pump sumps when it is closed. All valves are Allis-Chalmers units.

The adjustable-blade pumps will vary in output to meet the gradual changes in flow requirements instead of stepped increments of flow with possible surges produced by fixed-blade pumps. An automatic positioner responsive to downstream hydraulic grade line automatically controls the pump-blade angles and, therefore, pump output. Two units will operate when an increase in the hydraulic grade line of the supply tunnel is necessary to increase raw-water flow to the plants. As demand increases the third unit will be used. The fourth pump serves as a standby unit. ◄◄

Philadelphia Spruces Up Its Old Water Mains

This spring Philadelphia awarded three contracts, totaling $820,000, to continue its extensive water-main conditioning program. More than 25 miles of mains, scattered at 60 points throughout the city, will be cleaned and lined. They vary in age from 25 to 125 years and have never been cleaned. Diameters vary from six inches to four feet.

Two firms will do the work. The Spiniello Construction Co. of Orange, N. J., holds one contract, calling for work on 39,200 feet of 6-, 8-, 10- and 12-inch mains at a cost of $230,000. The other firm, the Centriline Corp. of New York, holds two contracts. One, valued at $350,000, involves 55,000 feet of 16- and 20-inch mains. A $240,000 contract embraces 48,800 feet of 24-, 30-, 36- and 48-inch mains. The latter contract also includes cleaning 63 feet of five-foot diameter steel main.

During cleaning, homes and shops receive water from lines laid on the top of the ground. Most of the work will be finished by June. ◄◄

Sea-Water Conversion Plant Contract Awarded

The Office of Saline Water, U. S. Department of Interior, has designated the Westinghouse Electric Corporation as the contractor for a sea-water conversion plant located at Point Loma near San Diego, Calif. It will produce 1.0 mgd of water by means of a multi-stage flash-distillation system. San Diego will purchase the converted sea water.

The flash-evaporation process to be used in the Point Loma plant consists essentially of spraying heated sea water under pressure into a chamber having a lower pressure and temperature. A portion of the water "flashes" into vapor and is then condensed, providing water practically free of impurities. The remaining salt water passes through a series of additional chambers where the process is repeated.

Responsible for both construction and start-up operation of the plant, Westinghouse will operate it for a shake-down period of 74 days including 30 days at full capacity. It will be the largest multi-stage flash-evaporation plant in the United States.

The Fluor Corp., Ltd., Los Angeles, handled the architect-engineering services and the Ralph M. Parsons Co. of Los Angeles will participate in the engineering and construction of the plant, one of five demonstration plants for processing sea or brackish water for agricultural, industrial and domestic uses. ◄

U.S. cast iron PIPE FOR WATER, SEWERAGE AND

easy does it

Nothing like the new USIFLEX® Boltless Flexible Joint Pipe for underwater installations.

Easy does it. No bolts, nuts, wrenches. Assembles fast with only a moderate thrust needed to move ball past self-sealing gasket into socket. Retainer ring provides positive lock against pull-out.

Here's the new answer to the old problem of laying underwater pipe quickly, economically, profitably. Call or write for our illustrated booklet.

U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines and Blast Furnaces to Finished Pipe.

USIFLEX®
BOLTLESS FLEXIBLE JOINT* PIPE

*U. S. Patent No. 2,564,938

INDUSTRIAL SERVICE CAST IRON

1 Insert the gasket in its seat in the socket. Forming gasket loop helps initial stage of seating. Release of loop allows gasket to spring into the gasket seat where it is securely held.

2 Apply special Usiflex lubricant to the ball and inside surface of seated gasket in socket. After lubrication, ball is ready to be pushed into socket.

3 Ball has been socketed. Retainer ring lugs have been lined up with recesses in bell and retainer ring is ready to be moved into the bell and rotated.

4 After insertion and rotation of retainer ring in bell, the lugs on retainer ring are in back of and in register with internal flange segments in bell. Lead lock is partially inserted into recess between the bell and retainer ring.

5 Lead lock completely inserted in recess is being caulked in place by hammer blows on a wide caulking iron.

OUR MUNICIPAL NOTEBOOK

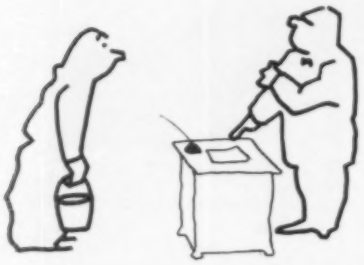
RANCH-STYLE PUMPING STATIONS

. . . mean that water-works pumping installations in San Bernardino, Calif., look like snug little homes for the weary commuter. These attractively landscaped "residences" have water reservoirs with nearly 2,000,000-gallon capacity with horizontal-shafted booster pumps delivering water to the distribution system against heads of 160 to 200 feet. Automatically controlled Clayton valves maintain the water level in the reservoirs.

* * *

NO ANNEXATION—NO WATER!

Springfield, Ill., says that if a suburb wants city water, it first should become a part of the city. At least these are the terms that it gives those suburbs that are contiguous with the city limits. For those that are not, the City Commission retains the discretion of granting them or not, depending on



the possibility of annexation plans of the intervening area.

Water rates also are substantially higher for out-of-city users.

* * *

A GOOD SANITARY FILL

. . . properly designed, located, and operated to meet public-health criteria, as well as such allied requirements as control of air pollution, fire hazards, and nuisance abatement has these characteristics:

It eliminates breeding of disease-vector rodents and insects by eliminating harborage and food supply.

It controls air pollution from dust, smoke and odor.

Its operating advantages may be listed as follows:

Where suitable land within economical haul distance is available it is the least expensive sanitary *refuse-disposal method.*

It requires a relatively small initial capital investment for equipment and facilities is usually required.

It can reclaim relatively useless land.

It is highly flexible; i.e., a site can be moved and operations expanded or decreased with a minimum of difficulty.

It effectively receives all ordinary community refuse with no supplemental disposal methods required.

Some disadvantages to be considered might include:

Possible short-term life.

Where limited sites are available it may be only a temporary solution to a long-term problem.

Length and cost of haul to suitable sites may be high.

Wet weather or extreme winter conditions may cause operational difficulties.

* * *

POOR STREETS ARE EXPENSIVE

. . . and W. E. Dick, city engineer of Waukesha, Wisc., has the figures to prove it. In the past five years, his unpaved streets cost nearly $2,500 per mile to maintain while paved streets cost about $1,300. Some 90% of the paved streets are over 30 years old and are being resurfaced with asphalt.

* * *

THE COST OF CLEANING SEWERS

. . . runs to less than 7 cents per lineal foot in Dallas, Texas, or less than one tenth the cost when city crews cleaned the sewers by hand. The maintenance crews have three Flexible SeweRodeR machines and one set of bucket machines and with them can clean 1,250,000 lineal feet of sewer per month. The rodding machines are handy in locating rapidly growing roots in the sewers, and they also quickly locate the distance to a collapsed or obstructed sewer area.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, N. Y.

ONE-MAN STREET CREW

. . . is the way things often look in Norway, Mich. City Manager Paul Trione gives one man a truck with a LoDal hydraulically operated front-end loader, and often is amazed at the number of things he can do. He can pick up and haul sand, gravel, snow, street debris. With the help of a chain, he can stockpile power poles for the city's municipal electric plant. In no more than ten minutes, he can remove the bucket, replace it with a snow plow, and start clearing the city's streets.

* * *

A SNOW LOADER

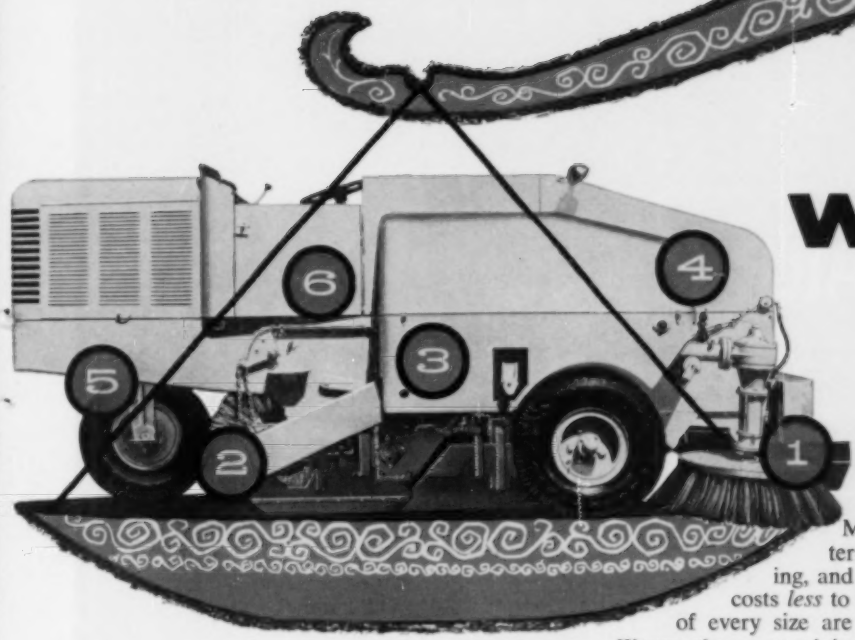
. . . to pick up leaves? Rochester, N. Y., uses them every fall, and thus finds extra work for a unit generally used only in winter. The Department of Public Works has divided the city into 11 districts. In eight of these it has assigned one Barber Greene model 544 loader to each. This unit is self-propelled, mounted on rubber tires. Each district has a little more than 60 miles of streets, almost all of which are tree-lined. The city assigns to each a crew of three laborers, a foreman, and as many trucks as the loader can serve. Early in the year, only three trucks may be required, but later this may be boosted to five, all holding from six to eight cubic yards. Householders sweep the leaves into the gutter and the crew picks them up, making three passes during the season.

* * *

TIN CAN REVENUE

Fort Worth, Texas, finds that the salvage of tin cans from its incinerator provides a double-barelled benefit. First it brings in a little revenue;

and secondly, it eliminates about 75% of the residue volume. The city has an agreement with a steel company to receive the cans after they have passed through a screening plant. The remaining metal-free ash makes excellent fill material. ◄◄



MEASURE THESE WAYNE SWEEPER FEATURES

BY SAVINGS YOU MAKE IN SWEEPING COSTS!

Measure Wayne Sweeper features in terms of cost-per-curb-mile of sweeping, and you will quickly see why a Wayne costs *less* to own, *less* to operate . . . why cities of every size are keeping streets sparkling clean—*Wayne* clean—at minimum cost . . .

1 FEATURE: Front located Gutter Broom. Stops needless tire damage, cleans curb returns and indented drains with ease, sweeps more area between parked cars. Provides the operator full forward vision for safety and efficient sweeping. *Guaranteed for the life of the Sweeper!*

2 FEATURE: Up to 62% fiber saving. The exclusive Wayne rubber pick up broom core, coupled with full, free floating broom suspension, provides maximum sweeping efficiency with minimum fiber requirements. Savings on broom fiber alone will amount to many thousands of dollars during the sweeper life.

3 FEATURE: Self-loads to full rated capacity. Powerful, squeegee-type elevator packs the large Wayne Hopper every time. You get *all* the sweeper capacity you pay for! Patented Wayne rubber elevator drive chains carry the exclusive Wayne *10,000 mile or 24 month guarantee*—proof of Wayne stamina!

4 FEATURE: Clean, compact dumping. A Wayne dumps its load from the front in a neat, compact pile. The entire operation is controlled from the operator's compartment. All Wayne Sweepers can dump over an embankment, place loads side by side or end to end at the dump site, eliminating the need for an extra truck and crew. You use the economical Wayne-pioneered method of central dumping.

5 FEATURE: Rear wheel steering. 3-wheel maneuverability and short turning radius get more sweeping done in congested areas, narrow or dead end streets. A Wayne pivots on its own gutter broom, easily sweeps the sharpest curb returns, cleans more area per curb mile.

6 FEATURE: Travel at traffic speeds. Full front axle, rugged welded steel frame and heavy duty tires enable a fully-loaded Wayne to travel at traffic speeds to the disposal point, then quickly return to sweeping. Waynes spend *more* time sweeping, *less* time dumping. Wayne strength and stamina give you years of extra service . . . eliminate costly premature sweeper replacement.

Add together all the savings these Wayne Sweeper features provide. There is just one choice for lowest cost-per-curb-mile of sweeping—and that choice is Wayne!

Mail the coupon today for additional facts and descriptive literature. Your inquiry will receive prompt attention.

WAYNE MANUFACTURING CO.

main office and plant:

3434 EAST LEXINGTON ST., POMONA, CALIFORNIA

Export: HENRY R. JAHN & SONS, INC., NEW YORK, N.Y.

branch offices:

- ATLANTA
- CHICAGO
- NEWARK

WAYNE

WAYNE MANUFACTURING CO.
3434 East Lexington Street
Pomona, California

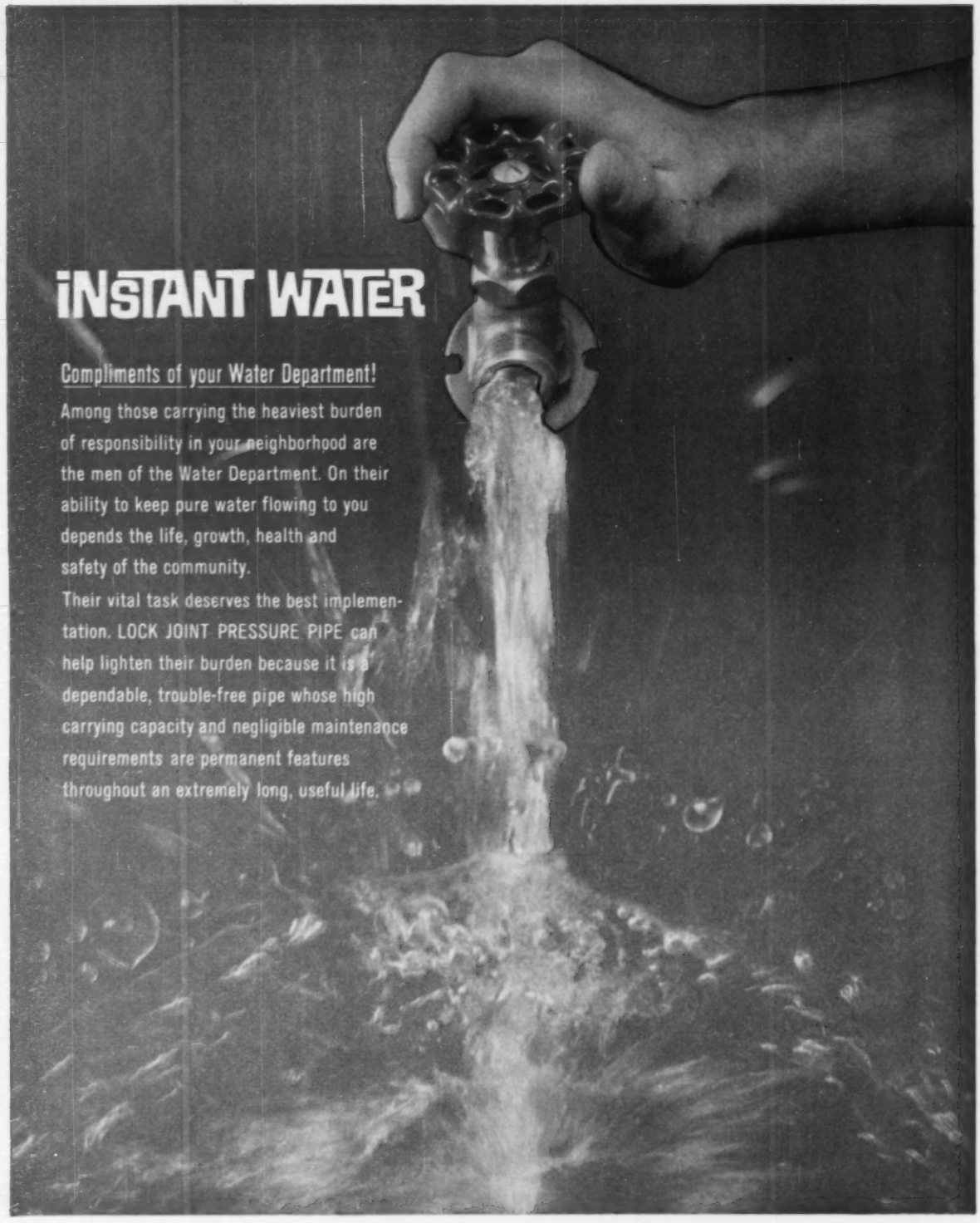
Please send me complete facts and descriptive literature.

Name_____

Title_____

Address_____

City_____ Zone____ State_____


INSTANT WATER
Compliments of your Water Department!
Among those carrying the heaviest burden of responsibility in your neighborhood are the men of the Water Department. On their ability to keep pure water flowing to you depends the life, growth, health and safety of the community.
Their vital task deserves the best implementation. LOCK JOINT PRESSURE PIPE can help lighten their burden because it is a dependable, trouble-free pipe whose high carrying capacity and negligible maintenance requirements are permanent features throughout an extremely long, useful life.

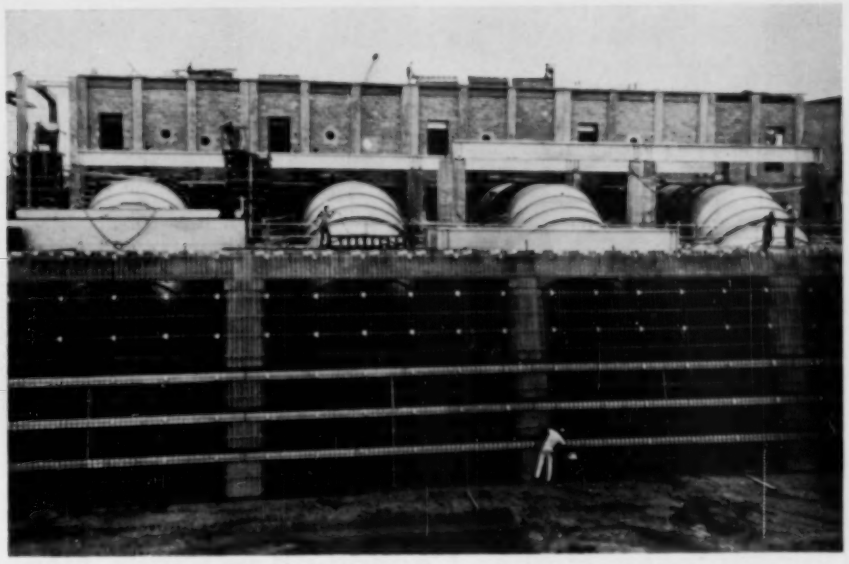
LOCK JOINT PIPE CO.

East Orange, New Jersey

Member of The American Concrete Pipe Association and The American Concrete Pressure Pipe Association

Sales Office: Chicago, Ill. · Columbia, S. C. · Denver, Col. · Detroit, Mich. · Hartford, Conn. · Kansas City, Kan. · Perryman, Md. · St. Paul, Minn. · Winter Park, Fla.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous



A trash rack prevents debris from fouling the propellors.

Mammoth Pump Discharges 466,900 gpm

Four new 152-inch pumps, the largest ever built by Fairbanks, Morse, will soon deliver a total of 1,867,000 gpm, as part of a flood-prevention project in Florida. A five-cylinder diesel engine, delivering 800 hp at 720 rpm, drives each pump.

The pumps obtain their 152-inch designations from the inside diameters of the discharge diffuser flanges. The discharge elbow flanges measure 13 feet 9 inches in diameter and the discharge outlets are 10 feet high and 20 feet wide.

The U. S. Army Engineers District at Jacksonville designed the flood-prevention project to drain storm water from the low agricultural land into three artificial lakes surrounded by dikes. When the weatherman indicates a severe storm or hurricane is in the offing, the pumps will drain the canals into the lakes to provide additional water-storage area. During storms of lesser severity, the pumps will operate only when the canal water surface reaches a preset level.

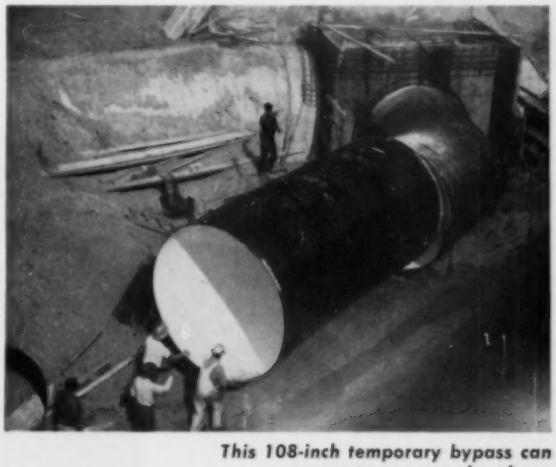
Many other similar installations with somewhat smaller pumps are functioning in this area which has a history of high-intensity storms. The Central and Southern Florida Flood Control District operates all installations.

The principal benefit of the program is the protection of the winter vegetable crop, valuable because so few other areas of the United States have the ability to grow them at this time of year. The Corps of Engineers estimates the benefit-cost ratio of this project to be 4 to 1. ◄◄

A Big Bypass

Los Angeles' Hyperion sewage-treatment plant set a record of a sort when contractors installed 65 feet of 108-inch diameter, asphalt-lined corrugated-metal pipe to carry sewage during installation of an electrically controlled gate in one of the outfall lines. The Pacific Corrugated Culvert Co., of southern California, fabricated the four sections (three elbows and a barrel) at its Irwindale plant.

A freeway project nearby used 600 feet of 8-gage, 84-inch diameter, asphalt-corrugated metal pipe as a sewer bypass. The line affected is a major trunk of the Los Angeles sewer system. Both bypasses will be salvaged for re-use or sale by the contractors when the jobs are completed. ◄◄



This 108-inch temporary bypass can expect to see use elsewhere.

In Flint, Chief Pratt will tell you

Compactness, Higher Capacity Key Flint's New Gamewell System

"We wanted an up-to-date, highly efficient alarm center in Flint," states Elmer L. Pratt, Chief of that Michigan city's fire department, "and Gamewell gave it to us. Not only is the new Gamewell system tops in efficiency and reliability . . . it actually costs us less than a leased telephone system."

Although Flint's new system has a greatly expanded capacity for additional circuits, it occupies much less space than the old system. It ties together the city's 290 street fire alarm boxes plus master boxes installed in major public buildings, schools, hospitals and industries. Scant seconds after any box is pulled, Flint's entire fire defenses are alerted to the location of the fire.

Chief Pratt recalls an incident that dramatically illustrates one of the system's most outstanding features — the fact that it is Three-Fold*. "We had a case where a car knocked out a circuit and burst into flames. A witness ran to the box and sounded the alarm. Though the circuit was broken, the alarm was received at the center. We wouldn't have received that alarm with the old system."

Make certain that your fire safety authorities know what positive steps can be taken toward reducing loss of life and property. Gamewell will be happy to assist you with your fire reporting problems. Write to THE GAMEWELL COMPANY, 1242 Chestnut Street, Newton Upper Falls 64, Massachusetts. A Subsidiary of E. W. Bliss Company.

*T. M. Registered

BLISS Gamewell®

FIRST...WHEN SECONDS COUNT

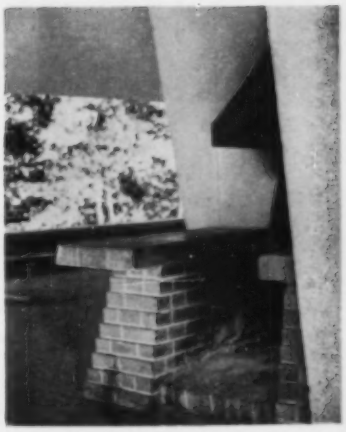
The sweeping concrete canopy shelters the paved picnic area.

Park Shelters Win Award

A group of five concrete-shell structures built by the Jackson County Park Department for use as picnic shelters at Lake Jacomo, Mo., has earned an award from the Kansas City Chapter of the American Institute of Architects for originality of structures in public works. The special award plaque lists William L. Landahl as Director of Parks and the architect, Elpidio Rocha, as designer.

Each structure consists of a hyperbolic paraboloid thin shell roof, 42 feet square, supported at the center by radiating concrete fins. Two picnic ovens and two work tables adjacent to the fins provide facilities for four separate family-size groups under each roof. Because the fins only partially screen the four sections from each other, the units are also adaptable for use by larger groups. Low perimeter brick walls keep young children enclosed and double as seating.

The location of each structure was carefully chosen to leave natural surroundings undisturbed. The absence of roof-edge supports permits an uninterrupted view, threby unifying the picnic area with the adjacent wooded tracts. Even when illuminated by the low-intensity indirect lighting at night, the shelters appear to belong to the forest itself. These shelters prove that economy can be beautiful—at the rate of $5.67 per square foot, which includes even the architect's fee.



Attractive hooded fireplaces adjoin the concrete fins at the center of each structure.

The Jackson County Park Department is located at 202 Court House, Kansas City 6, Mo. ◄◄

Deer Repellent Protects Parks

Hungry mule deer that come down from the wild, hilly terrain of Griffith Park in Los Angeles to nibble on park foliage undoubtedly wrinkle their short, wet noses and wonder why their food is so bitter.

This bad taste is the result of an application of an effective chemical deer repellent which city park foremen apply to the greenery. Deer particularly like hibiscus but foremen report that the hungry ruminants also munch azaleas, Arizona cypress, Catalina cherry, mock orange, or any greens they can reach. The effect of the repellent is such that once a deer bites a sprayed leaf, he drops it and leaves the tree or shrub alone. The chemical is harmless to both the foliage and the deer.

The Agricultural Division of the Morton Chemical Co., manufactures this zinc dithiocarbamate-amine complex (20%) and metallic zinc (3.2%) product called New Improved Z.I.P. Park employees dilute one pint of the chemical with two gallons of water and apply with a 2½-gallon sprayer. A five-pound can of the repellent lasts a year.

During the dry months deer feed on park growth. The animals flee from their hilly retreats because of water shortages. There is little food in the park's dry, desolate ravines. In the early morning or late evening hours the hungry deer ramble into the park growth. Occasionally a buck wanders down among the Sunday crowds, only to be frightened off by curious children.

Although deer in the 5,000-acre Griffith Park are pests, the park is a protected area, closed to hunters even in its wild, steep canyons, because the Los Angeles Municipal Code prohibits hunting within the confines of the city. The deer repellent protects park foliage without harming the animals.

MORRIS SCHULATSKY
Recreation and Parks Department
Los Angeles, Calif.

Rising costs were plaguing Green Bay, Wisconsin's street name sign system. Then Director of Public Works Francis J. Euclide talked it over with 3M. "When I had the facts," he recalls...

"I SAW HOW 'SCOTCHLITE' SHEETING WOULD SAVE MONEY FOR GREEN BAY"

When reconditioning street name signs begins to cost more than buying new ones, something must be wrong. So thought Director of Public Works Francis J. Euclide of Green Bay, Wisconsin, about three years ago.

"I remember the day," he says, "that I discussed our problem with the 3M salesman. He gave me the costs of a different system: making and maintaining all our signs with 'Scotchlite' Reflective Sheeting. I checked his figures against my own costs. It was obvious. In the long run 'Scotchlite' Sheeting would save money for Green Bay."

And so it has. A one-man shop, centered around a "Scotchlite" Vacuum Applicator that bonds reflective sheeting to aluminum blanks, turns out low cost, first quality signs as quickly as they are needed. No more waiting weeks, even months, for sign delivery.

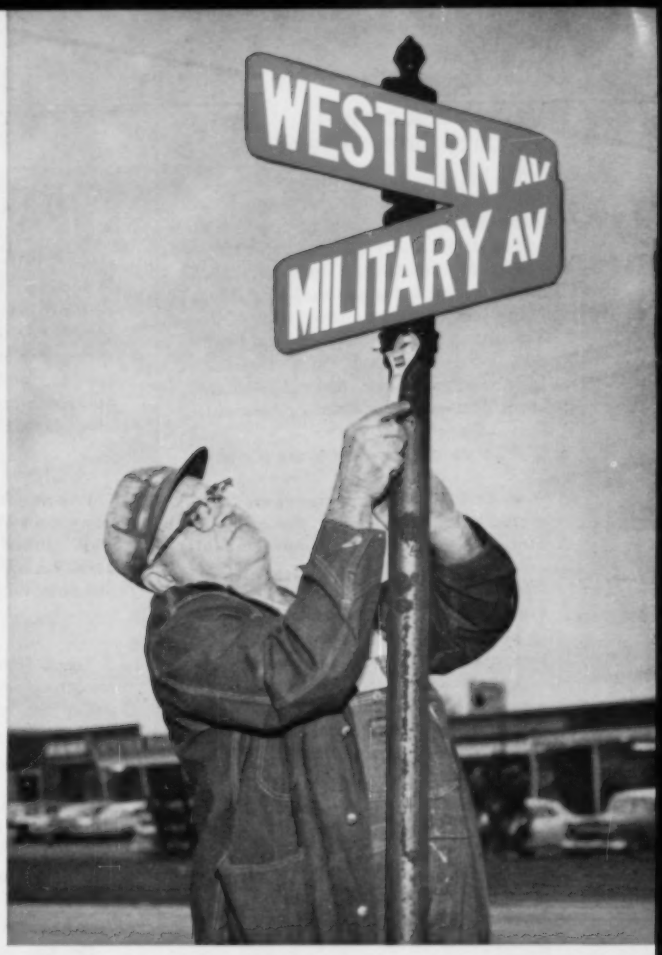
Maintenance is simplified and less expensive, too. The aluminum is easily reclaimed, requires no priming, and can be quickly refaced with pre-cut reflective letters and backgrounds.

While sign costs dropped in Green Bay, sign performance immediately went up. For street name signs of "Scotchlite" Sheeting are brightly visible, clearly readable in headlight beams. They never leave motorists in the dark.

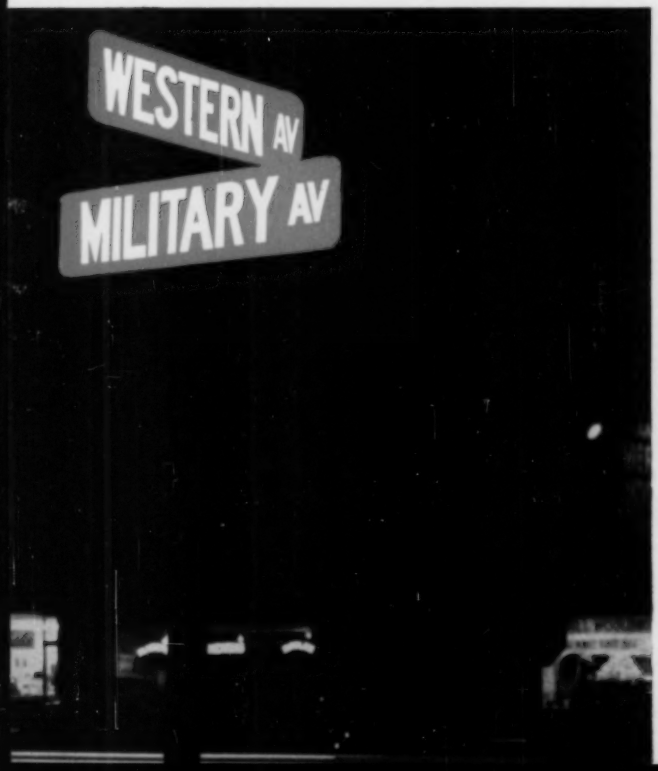
Have *you* looked at your street name sign system lately?

HIGH COST OF MAINTENANCE on signs like this led Green Bay to switch to "Scotchlite" Sheeting. It used to take six men all winter to respray the old backgrounds and letter new legends by hand. If signs were bent, they chipped, rusted, and had to be thrown out.

REPLACEMENT WITH "SCOTCHLITE" Sheeting, applied to aluminum panels, has proved to be a money-saver. Today one man in the Street Dept., Charles Lauscher (right), makes and maintains all signs for an entire city of 63,000 people. If these chip-resistant, rust-proof signs are ever bent, they are easily straightened and returned to duty.



KEY TO FAST SERVICE in Green Bay's new signing system is the "Scotchlite" 3′ x 4′ Vacuum Applicator. "Before," Mr. Lauscher says, "it sometimes took two months to get a replacement sign. Now, if a home owner complains about a sign that has been vandalized, I can bring it in, apply a new face in the applicator if necessary, and have it back on the job—all within an hour or two."



SCOTCHLITE®
BRAND
REFLECTIVE SHEETING

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

"SCOTCHLITE" IS A REGISTERED TRADEMARK OF THE 3M COMPANY

Who Becomes A City Manager?

To become a city manager today, you generally need prior experience as a manager of another city, as an assistant to a city manager, or other public administrative experience. A study by the International City Managers' Association shows that of the 339 managers appointed last year, 88% previously held public administrative positions; only 12% came from non-governmental or unidentified backgrounds.

A more detailed analysis showed:

- **42% (143) were managers "promoted" from other cities, the one way that a manager has of improving his economic position.**
- **6% (21) were former city managers re-entering the profession.**
- **19% (64) were former administrative assistants or assistant managers.**
- **21% (69) were appointed from other public administration positions, chiefly department heads.**
- **12% (42) entered the field from non-governmental or unidentified positions.**

More than half of the men entering the profession for the first time were under 40 years of age and 20% were under 30. A total of 80% were appointments from outside the city making the appointment, the largest percentage in recent years. ◄◄

7 Ways to Upgrade City-Administrator Positions

It is becoming more difficult for a municipality to keep good men unless it can assure them that they will not be fired without just cause. This is particularly true of city managers and a recent study at the University of California uncovers seven ways that will permit a manager to feel more secure in his position without jeopardizing good council-manager relations. These are:

- **Clearly define, in the city charter, the respective authority, duties, and powers of both the council and the manager.**
- **Encourage a city council to choose a manager through selective methods and procedures which assure the selection of a competent, experienced man with compatible characteristics.**
- **Require more than a simple majority of the council to appoint and remove the manager.**

(Continued on page 38)

Air Pollution Control News

N. Y. C. Hosts 54th Meeting

Eighteen technical sessions will highlight the 54th annual meeting of the Air Pollution Control Association, to be held in New York City, June 11th through 15th. Among the topics to be discussed are instrumentation, administration, law, health, community surveys, incineration, ambient air quality standards, fuels, meteorology, control equipment, research, automotive problems, planning, administration, processing. The sessions are to be held in the Hotel Commodore.

National Survey in July

Five-minute, around-the-clock readings of pollution in the air of downtown Washington, D. C., will begin July 1st, as part of a nationwide United States Public Health study of the effects of vehicular pollution on human health. The machine will take samples and punch the data on tapes.

Oil Heating Equipment

The Oil Health Institute of America is sponsoring a research project concerned with the smoke-emission factors from oil heating equipment, under the direction of Charles Pesterfield, Professor of Mechanical Engineering at Michigan State University.

Air Pollution and Milk

Air pollution may be affecting the milk we drink, according to Harold O. Clark, milk-flavor specialist for the state of Vermont. Apparently, any odor in the air which a cow breathes is transferred into the taste in the milk she gives.

A Russian Problem Too

On his visit to the United Nations in New York City last Fall, Soviet Premier Nikita S. Khrushchev told Americans that Moscow and other Russian cities are almost free from air pollution. Recently, however, two Russian sanitation experts, writing in Moscow's *Pravda*, said: "In some regions of Moscow, air pollution is still higher than the sanitary norm although in some regions during the last ten years it has decreased from two to five times." The experts suggested that the factories should not get bonuses for overfilling production quotas unless they install anti-air pollution devices.

Appointments

Carl A. Marshall has been named field engineer for the Eastern District by the Air Pollution Control Division of the National Coal Association. He was formerly vice-president in charge of sales for the Warner Collieries Company in West Virginia. . . . L. C. Burroughs, assistant to the vice-president in charge of manufacturing for the Shell Oil Company, has accepted an appointment as consultant on air and water pollution with the American Petroleum Institute. Mr. Burroughs will be with API on a full-time basis until his retirement from Shell at the end of 1962.

Pollution From Oxygen

The use of oxygen in making steel, to remove impurities from the finished product, is resulting in battles around the country between the steel companies and citizen groups in steel-making communities, since the added use of oxygen is producing more air pollution. Cleveland, Ohio, Buffalo, N. Y., and Youngstown, Ohio, are the centers of such disputes, which have the added angle of causing labor concern about additional automation entering the industry.

—Prepared by Kenneth Kowald

Regular Submersible

SUBMERSIBLE PUMPS

deliver water

economically

consistently

silently

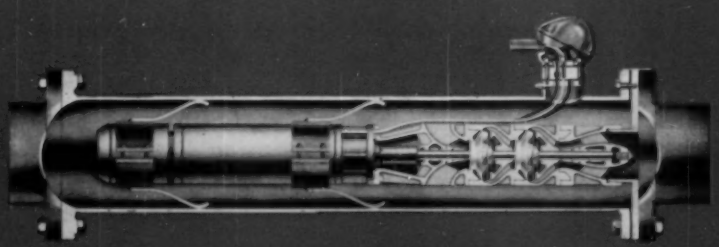
efficiently

The Layne Submersible Pump installation gives you noise free operation because the pump and motor are completely submerged. The Layne Submersible is adaptable to all wells; requires a minimum of space since no pump house is required; eliminates possibility of water contamination; and eliminates the opportunity for vandalism or other accidental mishap or damage.

Layne Submersible Pumps are available for wells as small as 6 inches and in capacities from 30 GPM up. For additional information write for free bulletin number 202.

The Layne In-Line Submersible pump provides the answer to many problems in booster pump applications. The pump operates as an integral part of the line and is designed for use by municipalities, industry, such as petroleum and chemical plants and by agriculture. Advantages include: simple installation, no additional space required, continuous service even under flood conditions, and no possibility of surface water contamination.

Layne In-Line pumps are made as small as 4 inch bowls on a 4 inch motor for use in a 6 inch pipe to deliver 30 GPM. Larger sizes are available as required. For additional information write for free bulletin number 203.



In-Line Submersible

Layne SINCE 1882 — COMPLETE WATER SERVICE

LAYNE & BOWLER, INC., MEMPHIS

General Offices and Factory, Memphis 8, Tenn.

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

Sales Representatives in Major Cities

Find LAYNE Fast in the Yellow Pages under pumps

Visit the Layne booth 213-215, AWWA CONVENTION, June 4-8, Cobo Hall, Detroit

Parking Space is Scarce!

Get the Most Out of It *with*...

MI-CO PARKING METERS

MI-COs help drivers to get their share of available parking space by metering its use. At the same time they gather all that's coming to city or private operators, because MI-COs almost never suffer down time and lost revenue. With only six moving parts, these meters function perfectly for years in weather hot or cold, wet or dry. Adjustable to any number of hours; and 1c to 25c, with one weatherproof coin slot. Pay for themselves quickly. Serving well over 500 cities.

Twin Automatics also available. Before buying new or replacement meters, write for our engineers' complete MI-CO story.

A Symbol of High Quality

M ABC

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

(Continued from page 36)

- **Require a resolution of intention to remove, with the reasons for the removal.**
- **Require a public hearing before adoption of final resolution, if requested by the manager.**
- **Provide terminal pay of at least three months following removal, except in instances of proven cause involving malfeasance, misfeasance, or moral turpitude.**
- **Provide a cooling-off period of three months or longer, following any municipal election, before the council can initiate removal actions.**

While many of the young city managers are well educated in political and other social sciences, the report notes that they need more practical experience at the general management level. Young managers also tend to give too much emphasis to their popularity as public speakers or to community work. Long tenure is better assured, the report concludes, when the young manager sticks to his main job—running the city government.

The report is a thesis presented to the School of Public Administration, University of Southern California, by Calvin Perkins. Mr. Perkins is city manager of Glendale, Calif., and has the longest tenure of any manager in that city's 45-year unbroken history of council-manager government. He is also western vice-president of the International City Managers' Association.

The report is obtainable at the University of Southern California Bookstore, Los Angeles 7, Calif., at a price of $2.25. The title of the thesis is "The Effect of Charter Provisions on the Appointment and Removal of City Managers." ◄◄

"I'VE CALLED YOU IN BECAUSE I THINK I'M WORTH MORE MONEY. SO HOW ABOUT WORKING HARDER SO I CAN GET IT?"

Step up your TRACTOR LOADER

WITH ALLIS-CHALMERS

Here's a project geared to the demanding standards of today's earth-moving men... bringing them the benefits of Allis-Chalmers' massive research and development in the form of significant product improvements. Here, for example, is some really special news about tractor loaders.

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

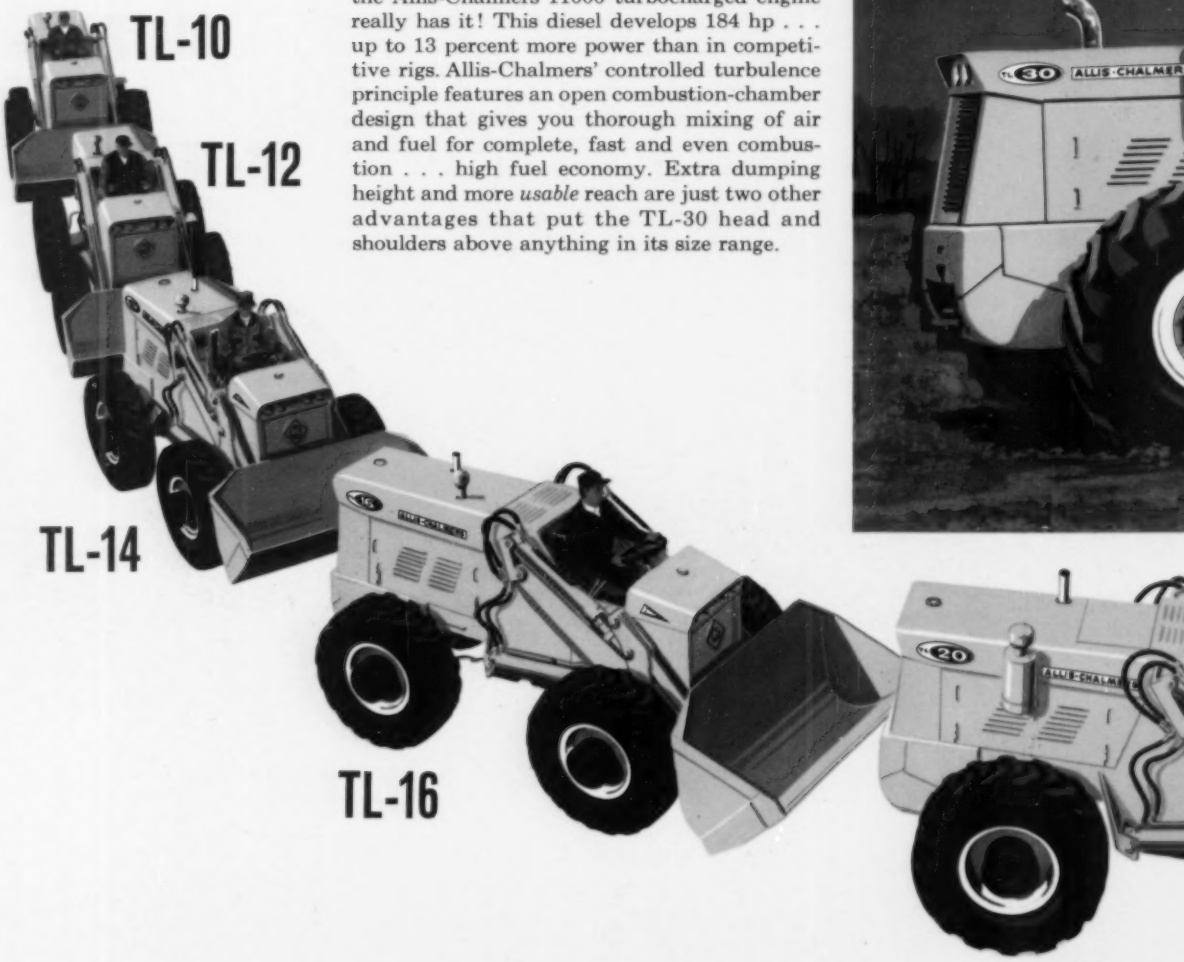
ANOTHER BIG TRACTO JOINS THE ALLIS-CHA

a line designed to help you set new production records...w

184-HP TL-30

Here's extra power and capacity to step up your production, excavating, hauling and dumping. The TL-30 gives you all of the basic performance advantages that have earned Allis-Chalmers loaders wide acceptance around the world.

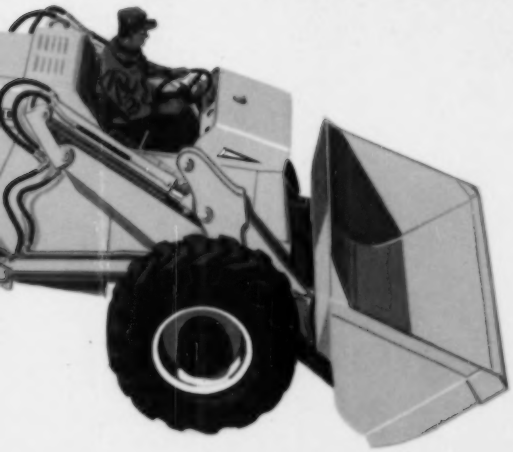
You'll go for the TL-30's new 10,500-lb carry capacity . . . up to 16 percent more than others in its class. When it comes to economy, the Allis-Chalmers 11000 turbocharged engine really has it! This diesel develops 184 hp . . . up to 13 percent more power than in competitive rigs. Allis-Chalmers' controlled turbulence principle features an open combustion-chamber design that gives you thorough mixing of air and fuel for complete, fast and even combustion . . . high fuel economy. Extra dumping height and more *usable* reach are just two other advantages that put the TL-30 head and shoulders above anything in its size range.



3,600 to 10,500-lb carry capacity • 1- to 6-cu-yd buckets • 77 to 184 hp

CTOR LOADER
CHALMERS LINE...

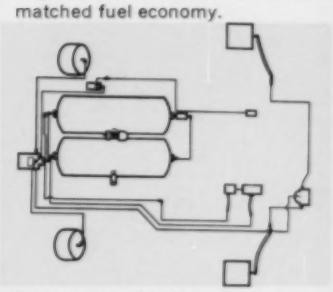
...whatever your over-all job requirements.



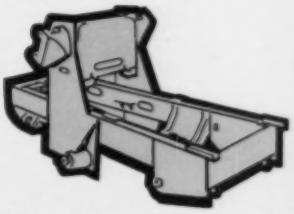
TL-30 10,500-lb carry capacity
2½- to 6-cu-yd buckets
Weight: 28,400 lb

There's more to this important
TRACTOR LOADER STORY
turn the page...

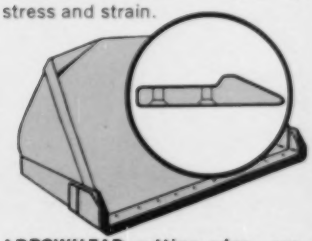
11000 turbocharged diesel engine—conservatively rated at 184 hp. One of the healthiest lines of engines in the business, with unmatched fuel economy.



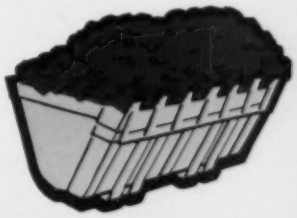
Safe, sure braking power—four-wheel air brakes let you work with confidence even on the steepest grades or stockpiles.



Full box frame—high-strength steel provides a solid backbone for the tractor loader . . . soaks up stress and strain.

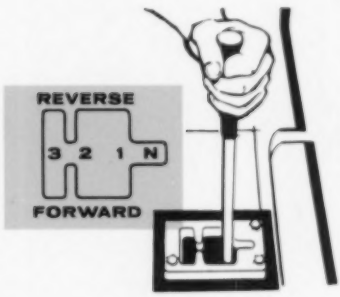


ARROWHEAD cutting edge—provides added strength and protection for the bucket bottom and sides . . . extends service life.



10,500-lb carry capacity—gives the TL-30 as much as 1,500 lb more carry per bucket load than others of comparable size.

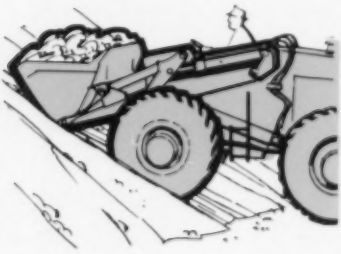
Full command in the palm of your hand—with single-lever control. You go into and out of any speed, forward or reverse, with just a quick movement of the lever. Operators work at peak capacity all day long.



These important

AVAILABLE TO Y

. . . exclusive built-in a



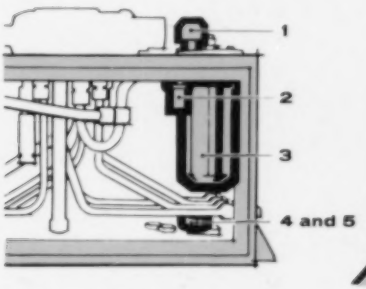
Ideal dump cylinder location—up and away from dirt and grit that score piston rods . . . damage vital hydraulic components. And, because cylinders are not attached directly to the bucket, there's less dead weight . . . more "pay" weight.

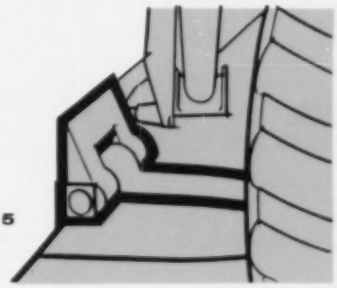
Production-boosting attachments—special buckets, lift forks, crane hook, backfiller blade, bucket teeth, ripper, log tongs, long booms.

Extra lift and reach—brings fast, smooth loading of high side-boarded trucks. The TL-30, for instance, offers 10′ 4½″ of dumping clearance . . . a foot or more extra lift than others of this size.

5-way hydraulic filtering—for complete system protection. Two air filters and three hydraulic oil filters assure peak operating efficiency . . . extended service life. Filters are easily accessible for cleaning and replacement.

Pin-connected axles—directly attached to the frame with thick, solid steel pins (not lightweight U-bolt connections). On rugged terrain, there's no shifting or rolling of axles under load. Allis-Chalmers tractor loaders stay on the job.

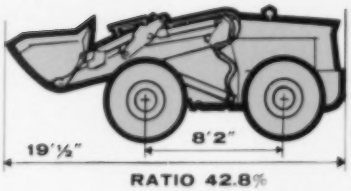




ant advantages are

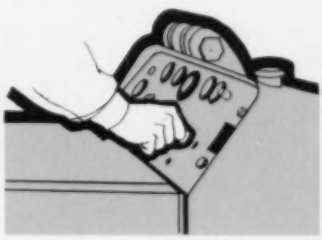
YOU ONLY IN ALLIS-CHALMERS TRACTOR LOADERS

in advantages

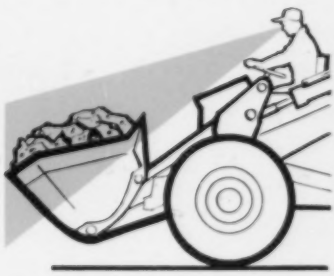


RATIO 42.8%

Top stability—For example . . . the TL-30 has an 8′ 2″ wheel base to a 19′ ½″ over-all length . . . a 42.8 percent ratio of wheel base to length for plenty of stability to eliminate tipping or spilling even on rough terrain.



Key starting—just like a car. No cranking, pumping or waiting for these machines. Just a turn of a key and you're ready to work.



Control tower visibility—with tapered hood . . . narrow cowl and unobstructed view of front-mounted equipment. Bucket-type seat is adjustable to operator's own preference.

See an Allis-Chalmers tractor loader before you buy your next unit. You'll find a model and size best for you in every way—in power, in production, in value. Your Allis-Chalmers dealer will demonstrate on your job, gladly!

Your Allis-Chalmers dealer is in business to . . .

PROTECT YOUR EQUIPMENT INVESTMENT WITH COMPLETE SERVICE

When you invest in Allis-Chalmers equipment, you get top performance in *every respect*. Your Allis-Chalmers dealer is fully equipped to serve you completely, conveniently. Make him your single source for:

- **Complete Parts Service**—original-quality parts on hand to meet your requirements quickly.
- **Ready-to-go Exchange Assemblies**—completely reconditioned assemblies on call. Your trade-in assembly is rebuilt without overtime charges . . . your machine is back to work quickly. Your cost? Only parts and regular-time labor needed to recondition your old assembly.
- **Specialized Service—Shop or Field**—top-notch mechanics are factory-trained to service your needs efficiently in a fully equipped shop or on your job.
- **Tailored Financing**—terms suited exactly to the financial requirements of all your machinery needs.

From one convenient source, then, you get the complete service package—job application information, new and used equipment, parts, service and financing. Who could be more interested in backing you up than your own dealer? That's his *business!*

Your every transaction in sales, parts, service and financing is fully backed and .....

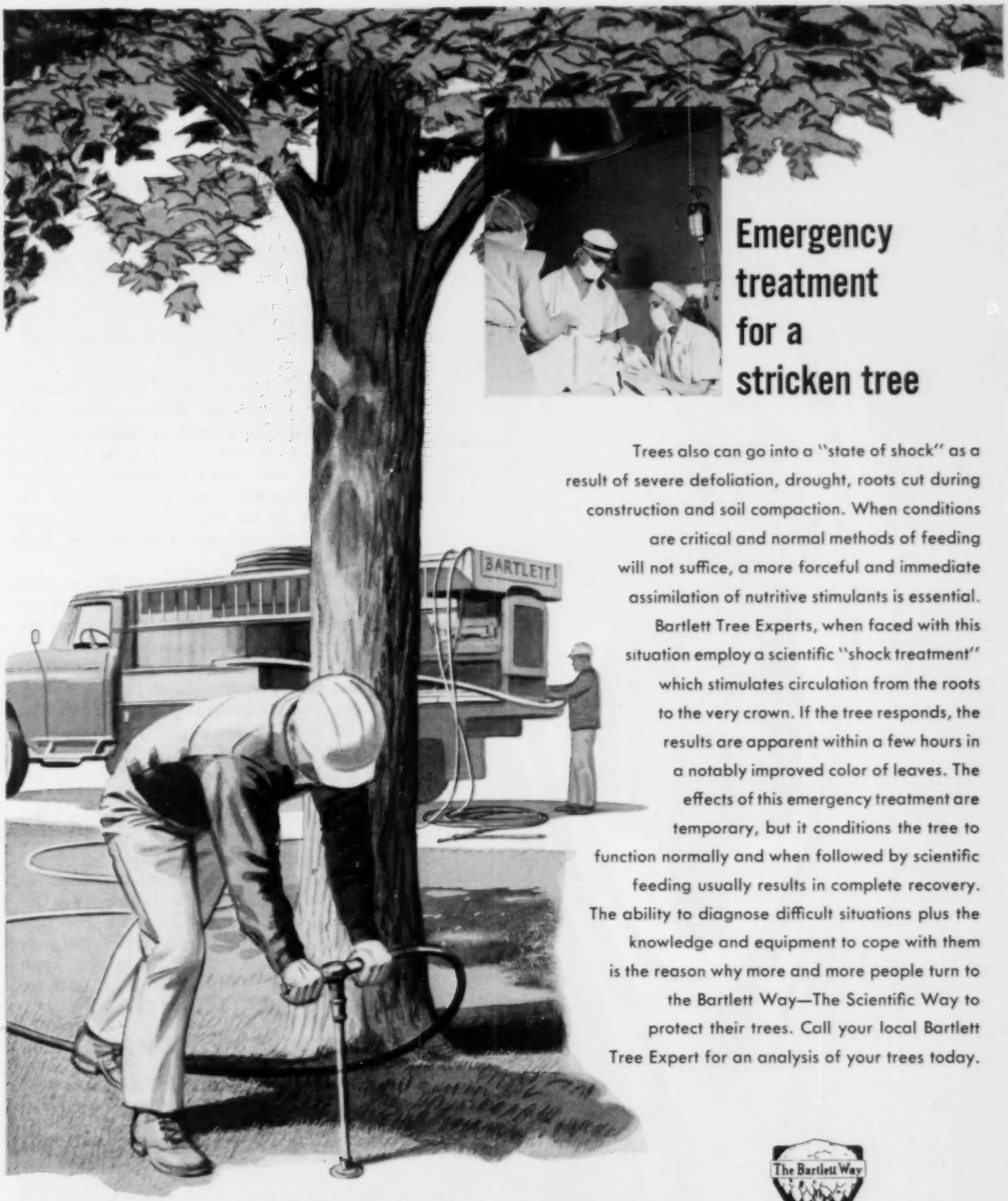
ALLIS-CHALMERS

POWER **FOR A GROWING WORLD**

Certified FOR YOUR PROTECTION

BY YOUR ALLIS-CHALMERS CONSTRUCTION MACHINERY DEALER

LITHO, IN USA D&J-61



Emergency treatment for a stricken tree

Trees also can go into a "state of shock" as a result of severe defoliation, drought, roots cut during construction and soil compaction. When conditions are critical and normal methods of feeding will not suffice, a more forceful and immediate assimilation of nutritive stimulants is essential. Bartlett Tree Experts, when faced with this situation employ a scientific "shock treatment" which stimulates circulation from the roots to the very crown. If the tree responds, the results are apparent within a few hours in a notably improved color of leaves. The effects of this emergency treatment are temporary, but it conditions the tree to function normally and when followed by scientific feeding usually results in complete recovery. The ability to diagnose difficult situations plus the knowledge and equipment to cope with them is the reason why more and more people turn to the Bartlett Way—The Scientific Way to protect their trees. Call your local Bartlett Tree Expert for an analysis of your trees today.

The Bartlett Way

BARTLETT TREE EXPERTS

Home Office, Research Laboratories and Experimental Grounds, Bartlett School of Tree Surgery, Stamford, Conn.

Local Offices from Maine to Florida, and West to Illinois and Alabama.

See your Local Telephone Directory for Local Address.

HARLEY-DAVIDSON SOLOS

thread their way through traffic

They thread their way through snarled traffic . . . through streets teeming with humanity . . . through congestion that would stop another vehicle in its tracks. That's why many a citizen has found a Harley-Davidson Solo a quick response to an emergency. It got there when seconds meant saving life, limb or property.

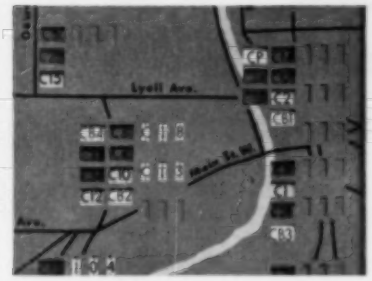
Throughout the United States, Harley-Davidson Solos and Servi-Cars are setting distinguished police records for dependability. The speedy, highly maneuverable Police Solo has proven itself an ideal pursuit vehicle for apprehending traffic violators and criminals. And for general all-around police duty — checking meters, routing traffic, marking cars, business and residential patrols — the versatile Harley-Davidson Servi-Car is without question the finest vehicle for the job.

Smooth riding, easy handling, simple maintenance, economical operation — are just a few of the Solo and Servi-Car features. For more facts on the new 1961 line of police motorcycles, see your dealer now. Or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin, for new, colorful, detailed brochure.

HARLEY-DAVIDSON

Police Motorcycles

Fire Dispatching In the Metropolis



A detail of the center section of the map.

A section of the system showing the dispatcher at the console and location map.

A master dispatch system for fire control in an expanding community is offered by General Railway Signal Co., Rochester 2, N. Y. The system consists of a map of the area, a dispatching console, and a command station for monitoring communications.

The purpose of the map is to show where all the apparatus is. Lights on the map locate the fire houses and indicate the status of the apparatus of each station: in quarters (no light), off duty (slow flash), on assignment (steady illumination), and on the air (rapid flash).

The dispatching console provides integrated control of fire-dispatching functions. It houses all circuits, wiring, transistors, power supplies and county and city radio transmitter consoles (as it does in Rochester, N. Y.) and dictating recorders. The console also controls the lights and data-display indicators on the fire-apparatus locator map.

The command station is for the chief or any other supervisory personnel. Here can be monitored all radio and telephone communications. The purpose of it all is to get the right equipment to the right place while it is needed. Each system is custom built to the specific needs of the area it will serve. ◄◄

Fire-Fighting Scout Cars

Police scout cars, which serve doubly as roving fire-fighting rigs, responded to 42 fires in Dearborn, Mich., during the last year, according to Fire Chief George W. Lewis in his 1960 annual report.

Twenty-two of these fires were extinguished by the dually trained patrolmen without assistance or the dispatching of heavy equipment. The double-duty scout cars, equipped with a minimum of fire-fighting tools, have been on around-the-clock service since October 1957.

In this picture Dearborn Police Corporal Frederick Delaney (left) and Patrolman Edward R. Van Arsdale use the five-pound carbon-dioxide extinguishers from their double-duty Ford Country Sedan scout car to snuff out a car fire. ◄◄

Eldrin is the new insecticide that kills resistant insects. Emulsifiable with water, Eldrin eliminates costly petroleum products. Its long lasting residual action is effective against all flying or crawling insects . . . even those that have become immune to DDT and other chlorinated insecticides. Eldrin kills flies, mosquitoes, ants, moths, silverfish and cockroaches. Controls grub worms, chiggers, and aphids. Eldrin is safe for trees—shrubs—lawns—ornamentals.

PORTABLE—DART POWER SPRAYER

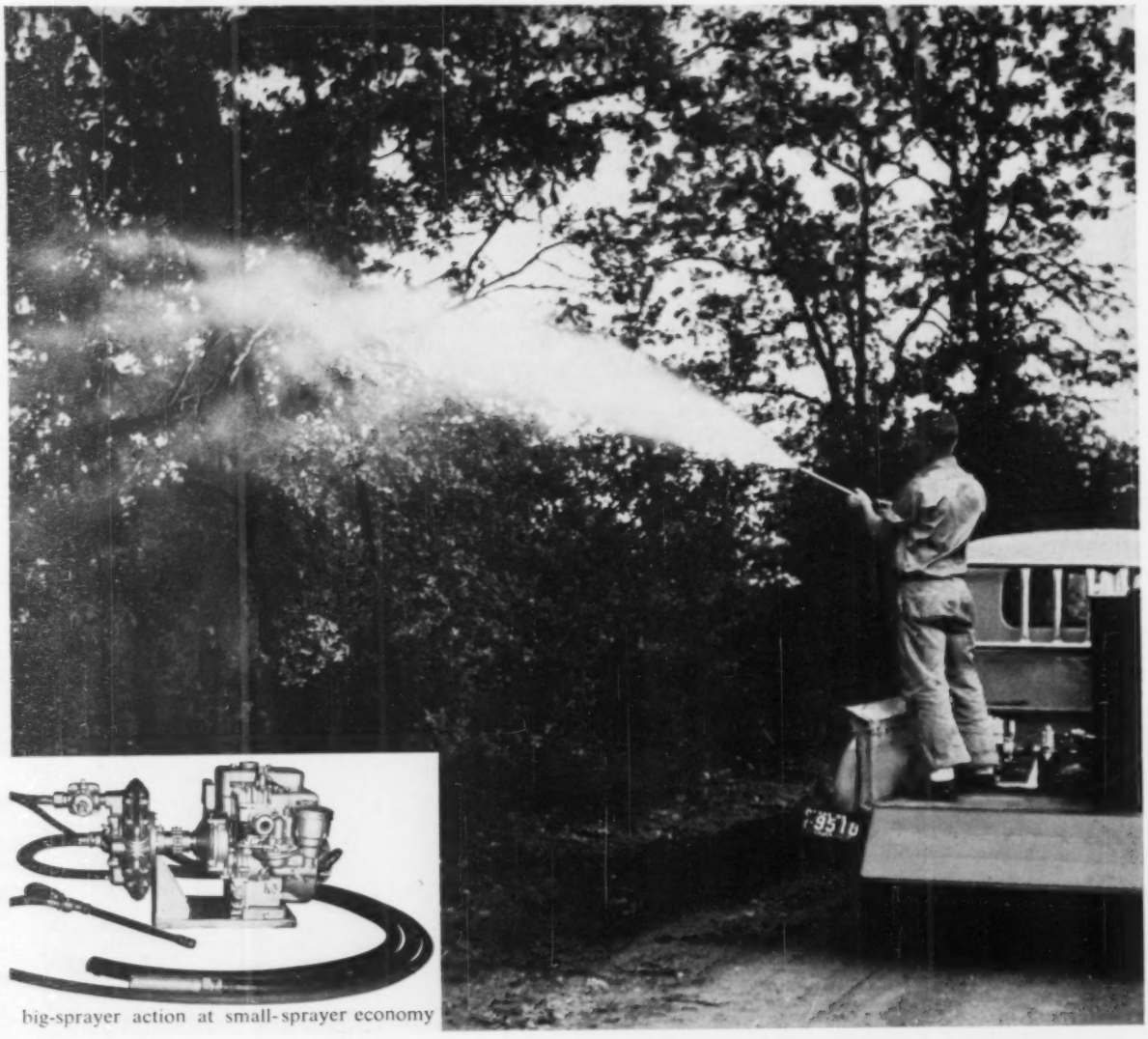
Compact, lightweight, and portable, the Dart Power Sprayer gives big sprayer action at small sprayer cost. A small sprayer for small areas, the Dart is ideal for municipal and industrial insect control. Easy-to-operate, the Dart can be used for mist, fog, or distance spraying. See the man from National Chemsearch for on-the-spot assistance with your insect problems. Write for information on the Eldrin Insect Control Program.

ELDRIN KILLS EVEN RESISTANT INSECTS

NATIONAL CHEMSEARCH CORP.

2417 Commerce Street, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

NEW POWERFUL INSECTICIDE GIVES POSITIVE CONTROL!



big-sprayer action at small-sprayer economy

Alleys Are Clean In Santa Monica

Alley sweeping requires an alert operator, for refuse cans, utility poles and swinging gates are but a few of the obstacles that are met each day.

Last December, Santa Monica (population 83,249) inaugurated a program for sweeping its 63 miles of alleys. The results are noticeable both in visual appearance and in favorable comments from the citizenry.

Our schedule calls for the sweeping of every alley at least once every two weeks. We stress thoroughness, rather than speed; thus, one sweeping usually entails two or three passes by the sweeper. Although the sweeper travels about 25 miles each work day (five days per week) it cleans only about seven miles of alley because of repeated passes.

One man performs the work, using an Elgin 81 motor sweeper with a three-yard hopper. This unit, besides having the capacity and maneuverability needed for alley sweeping, is durable enough to stand up to the wear caused by the rock and oil surface found in most of Santa Monica's alleys.

Compared to street sweeping, this program is extremely hazardous and difficult. Automobiles backing out of garages and residents opening backyard gates without looking, are two common dangers. The work is frequently akin to running an obstacle course, with illegally parked cars, trash cans, manhole covers, meter boxes, telephone poles and low-hanging tree branches and shrubbery to be avoided. However, effective Police Department regulations and growing citizen cooperation is lessening the problem daily.

We can measure the effectiveness of the program. At the beginning, the sweeper picked up an average of seven tons of material each day; today the average is about three tons. Final evidence is the alleys, for their clean appearance offers a strong testimonial to the success of the program.

RUSSELL D. JONES
Senior Administrative Assistant
Santa Monica, Calif.

Street Cleaning Means Flushing Too

When Jackson, Tenn., decided to put street cleaning on a daily basis, the first thing we did was buy the necessary equipment. This consisted of two 1,500-gallon Etnyre flushers, one on a Chevrolet chassis and the other on an International chassis, and two Wayne sweepers, one of three-cubic-yard capacity, the other four. Personnel for this work includes one part-time superintendent, five operators, three laborers for hand sweeping and two part-time laborers for refilling brooms.

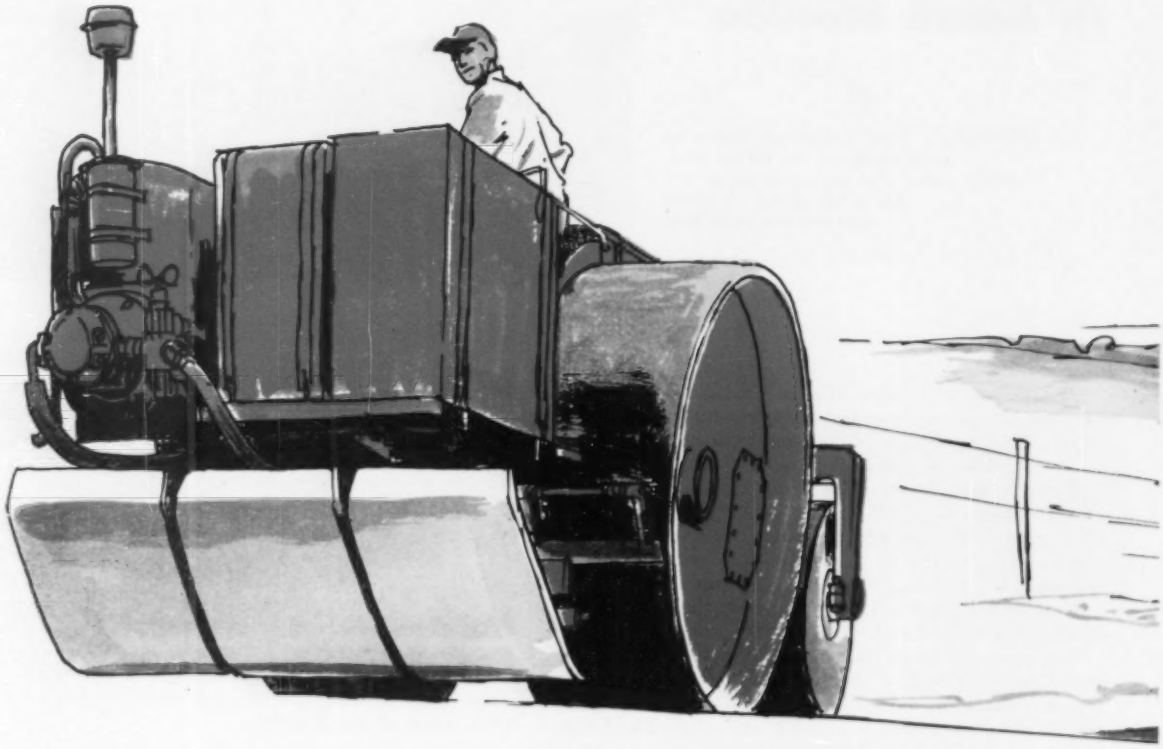
We sweep the downtown commercial section nightly and also use the three hand-broom sweepers and one flusher for about five hours each night. The main thoroughfares throughout the city are swept three times per week during the day. Residential areas are cleaned twice a week during the day. Standard practice consists of a flusher following the sweeper.

Jackson has a population of about 34,400 persons, an area of 8.1 square miles and some 87.7 miles of paved streets. Each sweeper averages about 15 curb miles per day. Excluding depreciation of equipment, it costs about $1.50 per curb mile for sweeping and about $1.25 per curb mile for flushing. Mileage per broom amounts to some 300 miles per gutter broom and 160 miles per main broom.

Jackson's street-cleaning budget for the year July 1, 1960 to June 30, 1961 is $47,386.83.

R. E. BAILEY
Commissioner of Streets and Utilities
Jackson, Tenn.

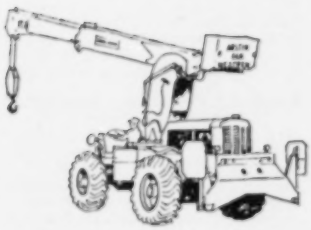
Standard street-cleaning practice includes flushing behind the sweeper to get rid of the last traces of dust.



A-W ROLLERS FINISH TOUGH-SPEC COMPACTION JOBS EASY AS 1-2-3

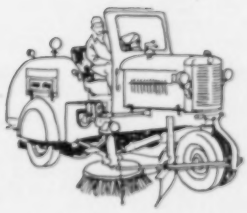
And they do it by any of three compacting methods—static, vibratory and pneumatic. Take this asphalt surface job as an example. First, the variable weight 3-wheel makes the initial breakdown pass with its heavy steel-wheel static pressure. Second, the new PR-11 9-wheel, 4 to 11-ton pneumatic tired roller performs the intermediate stage with a kneading action which simulates heavy traffic loads and reduces voids to approximately 3%. Third, the 2-wheel A-W tandem roller, again with variable weight, wraps up the whole job and leaves a smooth-as-glass finish. The granular subbase was compacted by the Austin-Western Roller Compactor, which uses a combination of both static and vibratory compaction for simultaneous surface sealing and low-level keying of voids.

Whatever your compaction job, there is an A-W unit to help you meet the toughest specs, today's and tomorrow's, in fewer passes. They are top-quality machines built to outperform and designed for easy maintenance—two of the reasons Austin-Westerns *save you time and money!*



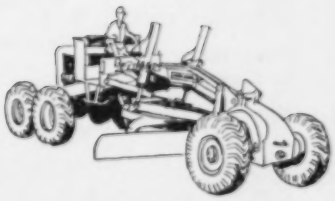
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms extend up to 48 ft. on some models.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 165 hp.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

BALDWIN BLH LIMA-HAMILTON

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 61.

Measures Water Use from Trickle to Torrent

736 These meters were designed to answer the specific needs of the water works industry for a meter that would insure better measurement at lower cost. For details on Sealed Register "Magnetic" meters, write ROCKWELL MFG. CO., DEPT. 159F, 400 N. LEXINGTON AVE., PITTSBURGH 8, PA.

What to Do About Damaged Parking Meter Standards

737 Rusted, bent or broken parking meter standards can be replaced at low cost and in just minutes, without digging, jack hammers or cement work. Secret's in the use of corrosion-resistant aluminum Fischer Base. Write FISCHER INDUSTRIES, P. O. BOX 153, MIDDLESEX, N. J.

Controls Water Level in Elevated Storage Tanks

738 Complete technical data is given in *Bulletin* W-48 for an altitude control valve which automatically maintains a constant water level and prevents overflow in elevated water storage tanks. For copy, write GOLDEN ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Alum Reference Handbook

739 A comprehensive booklet on the properties and uses of aluminum sulfate includes standards and specifications for alum for water and sewage treatment of the Federal Agencies and of the American Water Works Association, as well as a series of convenient conversion charts as tables. Write STAUFFER CHEMICAL CO., 380 MADISON AVE., NEW YORK 17, N. Y.

Uses Infra Red to Count Traffic

740 This effective engineering device uses infra-red rays to count and detect vehicular traffic in from one to three lanes. Model D-101 Traffitrol Detector has been developed by MINNEAPOLIS-HONEYWELL, HEILAND DIVISION, 5200 E. EVANS AVE., DENVER 22, COLO.

Asbestos-Cement Pressure Pipe

741 By writing to KEASBEY & MATTISON, AMBLER, PA., you can get full facts on this nontuberculating, corrosion-resistant pipe, whose light weight makes it easy to handle and helps reduce installation time and costs. Also ask about the "K&M" Fluid-Tite Coupling.

Selecting the Right Traffic Line Marker

742 There's an easy way to mark traffic guide lines; usually it's dependent upon using the right equipment and materials. A 16-page catalog, offered by the manufacturer of Mark-Rite equipment, tells how to select the proper traffic line marker for the job. Write UNIMASCO, INC., UNIVERSAL MFG. & SALES CO., 424 W. REDONDO BEACH BLVD., GARDENA, CALIF.

Broadens Backhoe-Loader Line

743 Parsons-Shawnee line of utility backhoe-loaders now includes four models; all fit all popular tractors. For features, specifications etc., on 10-foot Model 1000, 12-foot Model 1200, 13-foot Model 1300; 15-foot Model 1500, write PARSONS CO., SHAWNEE DEPT., NEWTON, IA.

Air Pollution a Problem?

744 A new brochure tells how harmful fumes and offending odors can be eliminated efficiently. For a copy, write "MUNICIPAL ENGINEER, DEPT. C," CATALYTIC COMBUSTION CORP., 4725 FOURTEENTH ST., DETROIT 8, MICH.

Help for Water Lines

745 Water works engineers will want to obtain this updated 28-page catalog on several models of dependable air control valves, designed to keep long water lines open for safe, efficient, economical operation. Write MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA.

Polypropylene Broom Filler

746 Wynene 18, a product of The National Plastic Products Co., is specially engineered for rotary street sweeper brooms and comes in guages and lengths to meet specific needs. For details and characteristics which enable it to deliver super-clean sweeping, write FREDERICK H. CONE & CO., INC., 181 FRONT ST., NEW YORK 38, N. Y.

Simplified Gas Chlorinator

747 CAPITAL CONTROLS CO., INC., WEST POINT, PA., offers an up-to-date bulletin on the ADVANCE, a compact, safe, solution-feed vacuum-operated system that shuts off gas supply at the cylinder when ejector water stops and alarms when chlorine cylinder is empty.

Mobile Hydraulic Hammers

748 The two new side-action hydraulic hammers—G400 and D500—introduced by ARROW MFG. CO., 194 W. DAKOTA AVE., DENVER 9, COLO., have important design features that make possible faster tamping, breaking and cutting at lower cost. Literature available on request.

Interested in Valves

749 . . . for water works, sewage plant and power applications? ALLIS-CHALMERS MFG. CO., HYDRAULIC DIVISION, YORK, PA., is making available the following valve engineering bulletins: Ball—02B9231; Butterfly—02B9226; Howell-Bunger—02B9206; Remote Control Systems—02B9227; Ring Jet—02B9154; Rotovalves—02B9255; Wafer—02B9230.

Water, Sewage, Waste Treatment Equipment

750 GENERAL FILTER CO., P. O. BOX 350, AMES, IA., manufacturer of water process equipment is offering four updated bulletins on treatment of water, sewage and industrial waste. Subjects include aerators, filter plants, Contraflow Upflow clarifiers, and "CR" Zeolite Softeners.

For Small Communities, Subdivisions

751 *Bulletin* 1870-A details the Accelapak, a low-cost, dependable, complete "package" water treating plant that's adaptable for clarification, softening, iron or color removal and sterilization. Write INFILCO, INC., TUCSON, ARIZ. Ask also for *Bulletin* 80, which shows a complete line of water and waste treating equipment.

For Extra Clarifier Capacity

752 Sewage treatment plant overloaded? CHAIN BELT CO., 4648 W. GREENFIELD AVE., MILWAUKEE 1, WIS., will gladly supply information on the Rex Rim-Flo Clarifier, which provides maximum efficiency while doubling clarifier capacity.

Rugged Refuse Collection Body

753 Hydraulic action, 85,000 pounds of pressure at 1500 psi, and 12-month warranty are just a few of the features of this tubular-shaped refuse collection body pointed out in a full specification brochure available from SEAL-PRESS, INC., RT. 10, BOX 208, SAN ANTONIO, TEX.

Water Well Problems?

754 Well screens need cleaning? Casing leaks? Flow channels need enlarging? If your city is facing any or all of these problems and would like to know of up-to-date techniques of remedying them, HALLIBURTON CO., DUNCAN, OKLA., will provide the information.

Pneumatic Compactor

755 *Bulletin* No. 410 gives facts, features, specifications on the AMPAC-4 pneumatic compactor, which AMERICAN-MARIETTA CO., CONSTRUCTION EQUIPMENT DIV., MILWAUKEE 1, WIS., has designed to deliver higher compaction densities in fewer passes.

Asphalt Patching Equipment

756 AEROIL PRODUCTS CO., INC., 69 WESLEY ST., S. HACKENSACK, N. J., announces a comprehensive brochure on municipal asphalt patching equipment and road maintenance tools, designed to help you handle spring patching faster, easier and at less cost.

90% Plus Pest Control

757 That's the mosquito-killing power of malathion-Lethane, which controls resistant strains, kills both larvae and adults, and can be applied by air, thermal fogging or mist spraying. For details on area control of mosquitoes, write AMERICAN CYANAMID, AGRICULTURAL DIV., NEW YORK 20, N. Y.

News for Municipal Waterfronts

758 Aluma-Floats, pontoons of maintenance-free, salt-water-proof aluminum, can be put to a variety of uses at municipal marinas, boat slips, swimming areas, etc. KIEKHAEFER CORP., SPECIAL PRODUCTS DIV. NO. 3, P. O. BOX 608, ST. CLOUD, FLA., has just introduced them and will send full information. Requests to be made on business letterhead.

(See page 55 for more Bulletins)

IF WATER IS YOUR BUSINESS...

YOU CAN PICK THE

AMERICAN METER

THAT MEETS YOUR SPECIFIC NEEDS

Water Characteristics are not the same everywhere. Mineral and chemical contents vary. Their reaction on the measurement instruments that guard your profits can cause you trouble and expense.

That's why AMERICAN offers you the most complete design flexibility of any meter and lets you pick the elements that meet your specific needs.

Only AMERICAN Offers a Choice of:

- **Sealed or Standard Register Box**
- **3 Piece or 1 Piece Measuring Disc**
- **Oil-Enclosed or Chrome Shell Gear Train**
- **Reinforced or Thrust-Roller Disc Insert**
- **Bronze or Nickel Alloy Measuring Chamber**
- **Frost Bottom of Breakable Bronze or Galvanized Cast Iron**
- **3 Housing Styles — Frost-Bottom, Split Case or Solid Case Construction**

You select the elements to fit your needs — if you like, our engineers will help.

In addition, each AMERICAN water meter provides you with the basic built-in features of unmatched construction simplicity, unequalled measuring accuracy, uniform precisely machined parts and assemblies, and the widest range of interchangeability.

AMERICAN meters are designed to last longer, and save you money — when you buy 'em, when you run 'em and when you repair 'em. Why not try them and see for yourself.

For complete details write for Bulletin 58

BUFFALO METER COMPANY, INC.

Dept. AC, 2917 Main St., Buffalo 14, N.Y. • 300 North Gilbert Ave., Fullerton, Calif.

Sales representatives throughout the nation

SUBSIDIARY of AMERICAN METER COMPANY

Here's What Makes The JOSLYN "400" Built-In-Ballast Luminaires Better...

...the results of imaginative research, sound engineering and advanced methods of manufacture

1

EASIEST TO INSTALL

Lightweight design (only 34 lbs. with Reactor Ballast) – all components are grouped on a sturdy saddle casting.

2

EASIEST TO MAINTAIN

New method of glassware latching facilitates cleaning and removal of refractor without using tools.

3

SMALL, ATTRACTIVE PROFILE

Successfully tested in wind tunnel under hurricane winds as high as 125 mph.

4

VENTILATED DESIGN

Louvers and vents insure cooler, longer life operation of electrical components and reduce glassware temperatures.

You can depend on Joslyn's long established reputation for advanced quality equipment

JOSLYN MFG. and SUPPLY CO., 155 N. WACKER DRIVE, CHICAGO 6, ILLINOIS

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 61.

Emergency Electric Plants

759 *Folder* K-2 introduces the current line of Kohler electric plants with automatic transfer switch, fully packaged for immediate, unattended takeover of emergency loads. Available in both diesel and gasoline models, sizes to 115 kw. Write KOHLER CO., KOHLER, WIS.

All-Weather Service Vehicles

760 Job call for hauling, winching, delivering, pushing, pulling? There's probably a "Jeep" vehicle that can do it—and do it well and at low cost. For full facts on these rugged 4-wheel drive vehicles, write R. J. KREUSSER, FLEET SALES MANAGER, WILLYS MOTORS, INC., TOLEDO 1, OHIO.

Adjustable-Blade Pumps

761 Detroit, Mich., installed four of these A-C pumps in a new booster station to augment raw water supply because they offer rapid, smooth response, under automatic control, to a wide range of flow demands. For full information on high capacity adjustable- and fixed-blade axial flow pumps, write ALLIS-CHALMERS, HYDRAULIC DIVISION, YORK, PA.

Built-In Ballast Luminaire

762 The Joslyn "400" weighs only 34 pounds with reactor ballast, is easy to maintain, successfully withstands 125 mph winds, and features ventilated design to insure cooler operation and longer life. Literature available from JOSLYN MFG. AND SUPPLY CO., 155 N. WACKER DR., CHICAGO 6, ILL.

From Salt Water to Fresh Water

763 A new method of converting sea or brackish water to fresh water is announced by GENERAL ELECTRIC, BURLINGTON, VT. It is called THIN-FILM distillation and is suitable for towns and cities.

It Stops Rust! Free Sample

764 You can now send for the new color catalog on New Color Horizons Systems and specialized Rust-Oleum Systems, which includes color charts and applications. Free test sample of Rust-Oleum 769 Damp-Proof Red Primer also available. Write RUST-OLEUM CORP., 2985 OAKTON ST., EVANSTON, ILL.

Inexpensively Measures Flow in Large Water Lines

765 This easily-installed probe-type flow transducer meters water flows in large pipe lines. RAMAPO INSTRUMENT CO., INC., 8 FIRST ST., BLOOMINGDALE, N. J., reports that the relative cost of the Mark V is reduced as the line size increases. Accuracy is 1% of full flow. Measures rate of flow in either direction.

Scrap Your Old Water Tank?

766 Why, when there's a way to give old water or fuel tanks 20 years of additional maintenance-free life. Let BRIDGEPORT CHEMICAL CORP., 75 EAST 2ND ST., MINEOLA, N. Y., tell you about Glass Armor Lining.

Reduces Cost of Positioning Pipe in the Trench

767 The advantages of palletized Griffin-20 cast iron pipe were brought home to Loveland, Colo. when it saved $101 per carload of pipe unloaded. Additional savings accrued because of Griffin's 20-foot pipe lengths, which meant assembling 10% fewer joints. Write GRIFFIN PIPE DIVISION, GRIFFIN WHEEL CO., COUNCIL BLUFFS, IA.

(See page 59 for more Bulletins)

COMPRESSION SEALED, VITRIFIED

CLAY PIPE

IMPERVIOUS

THE STANDARD in SANITARY SEWERS

now...

a cost-cutting Clay Pipe Joint that lab tests indicate will last as long as the pipe itself

The secret's in the joint—developed after years of research by the Clay Pipe Industry's modern laboratory at Crystal Lake, Illinois.

The joints are self-sealing, offering dramatic savings in installation time and trouble. Made of resilient materials, they are designed to resist corrosion from acids and gases, infiltration and exfiltration.

Accelerated lab and field tests indicate these new joints will last as long as the pipe itself—giving engineers and contractors the new standard in high performance and trouble-free sanitary sewer lines.

These revolutionary joints are now available on lifetime Vitrified Clay Pipe all over the country on sizes from 4 inches to 36 inches, in some areas, up to 42 inches. They are built to exceed rigid ASTM and other applicable standards.

Send for full details on this installation cost-cutting research breakthrough. Find out how

Research combines clay's long life with fastest jointing ever.

COMPRESSION SEALED, VITRIFIED

CLAY PIPE

IMPERVIOUS

THE STANDARD in SANITARY SEWERS

NATIONAL CLAY PIPE MANUFACTURERS, INC.

1028 Connecticut Avenue, N.W.

Washington 6, D. C.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Ave., Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

(name)

(company)

(street address)

(city and state)

B-3C23 AC

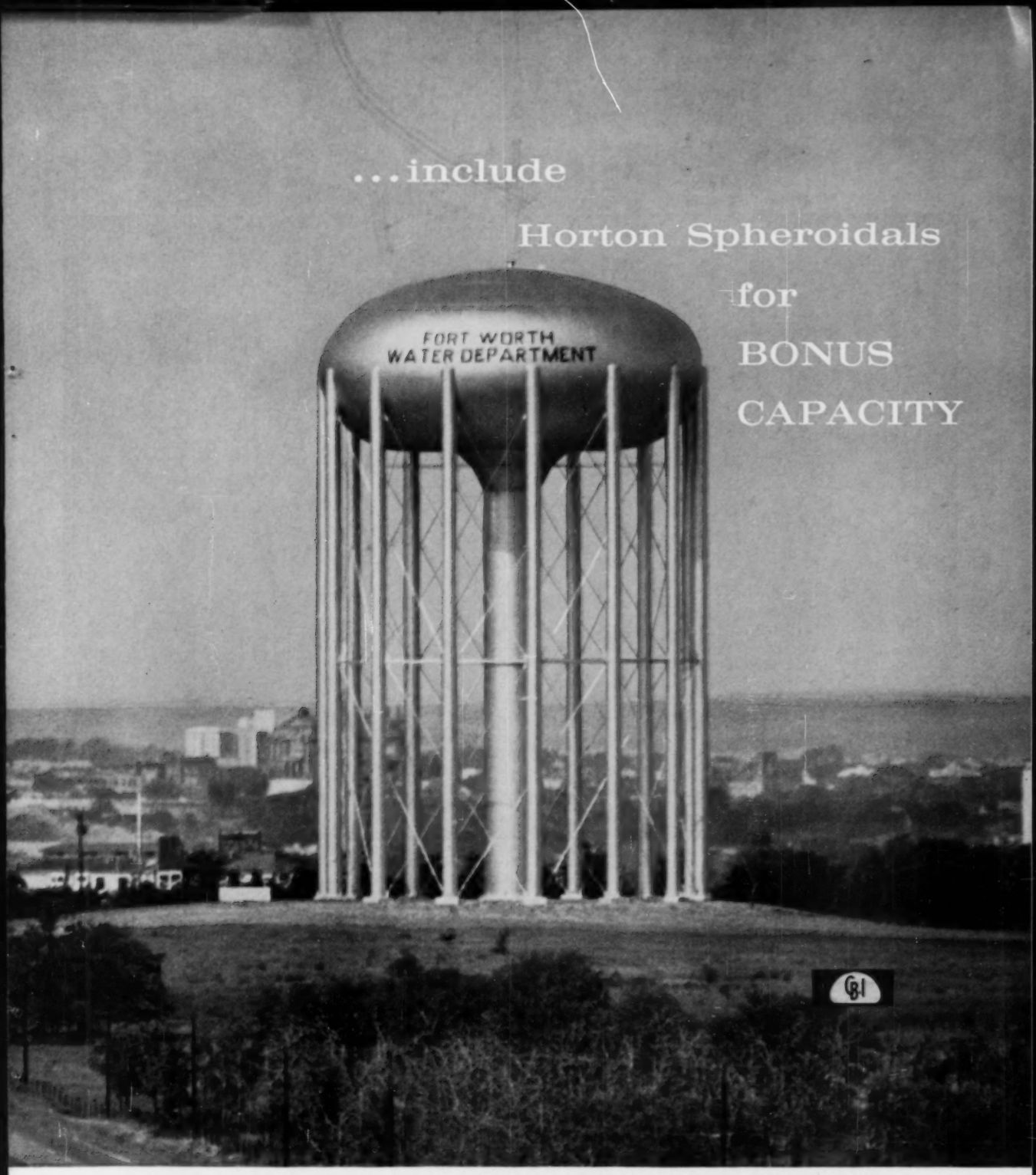
Horizons of Modern America

1,500,000 gallons – Wheaton, Ill.

750,000 gallons – Rochester, Mich.

500,000 gallons – Lewisville, Tex.

CB-6112



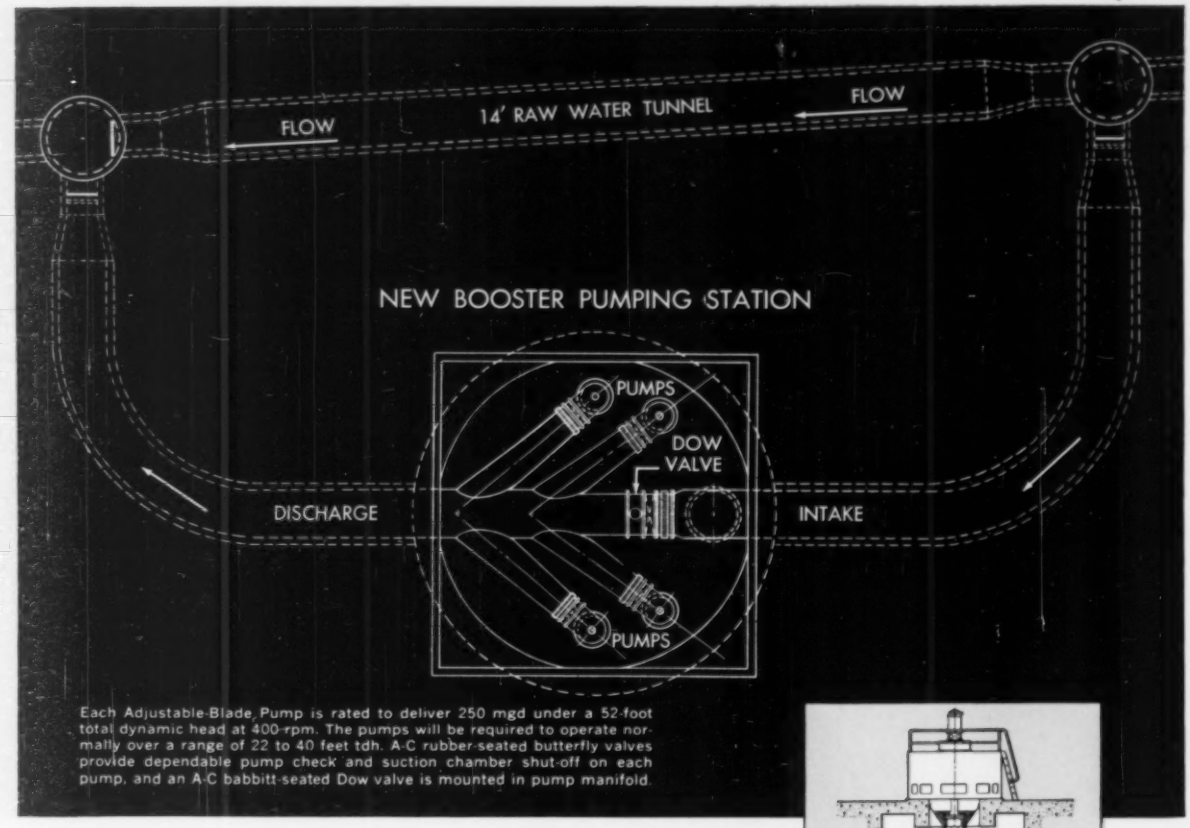
The 2,000,000 gallon Horton Spheroidal elevated tank in Ft. Worth, Texas, is a graceful symbol of contemporary, efficient water storage.

An original CB&I design introduced in 1958, the spheroidal tank requires less steel than conventional designs. The economies are readily apparent, often resulting in bonus capacity at very little additional cost over other designs. Capacities range from 200,000 to 3,000,000 gallons.

This is another example of how CB&I's ingenuity in design, craftsmanship in steel, and complete responsibility from start to finish can be beneficially applied to your water storage tank. For additional information, contact Chicago Bridge & Iron Company, 332 South Michigan Ave., Chicago 4. Ask for Brochure A-30,"Elevated Steel Storage Tanks."

CB&I

ALLIS-CHALMERS



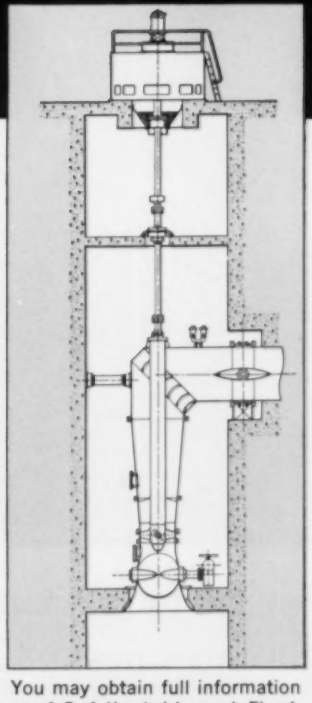
Each Adjustable-Blade Pump is rated to deliver 250 mgd under a 52-foot total dynamic head at 400-rpm. The pumps will be required to operate normally over a range of 22 to 40 feet tdh. A-C rubber-seated butterfly valves provide dependable pump check and suction chamber shut-off on each pump, and an A-C babbitt-seated Dow valve is mounted in pump manifold.

A-C Adjustable-Blade Pumps help City of Detroit augment raw water supply!

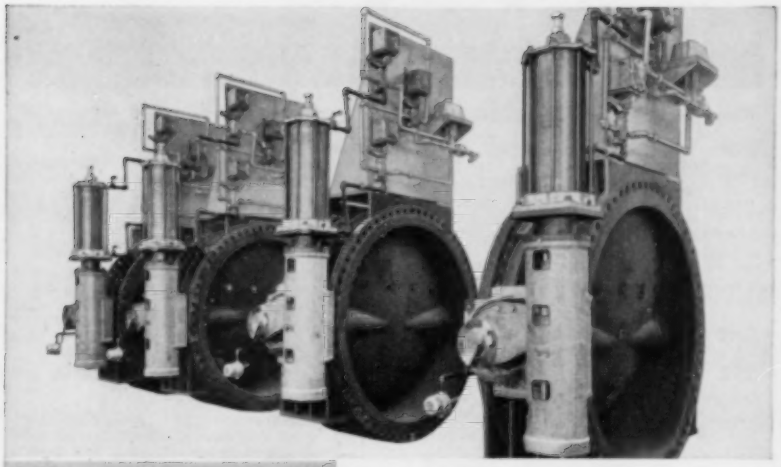
To augment the supply of raw water, Detroit, Michigan has installed four A-C Adjustable-Blade Pumps in a new booster pumping plant near the Detroit River. Pumps of this type were selected for their rapid, smooth response, under automatic control, to a wide range of flow demands.

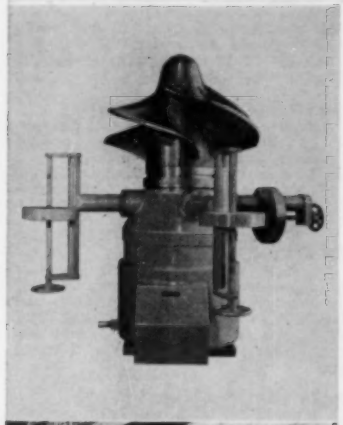
Adjustable-Blade Pumps will vary in output to meet the gradual changes in flow requirement as compared to stepped increments of flow and possible surges which would result if fixed-blade pumps had been installed.

Two of these pumps will operate when required to raise the hydraulic grade line and supply adequate raw water to two remotely located treatment stations. As demand increases, a third pump will be used. A fourth pump is available for standby service. Pump blade angles are controlled automatically by a positioner responsive to downstream hydraulic grade line. A-1488



You may obtain full information on A-C Adjustable and Fixed-Blade High Capacity Axial Flow Pumps and Valves by writing to Allis-Chalmers, Hydraulic Division, York, Pennsylvania.

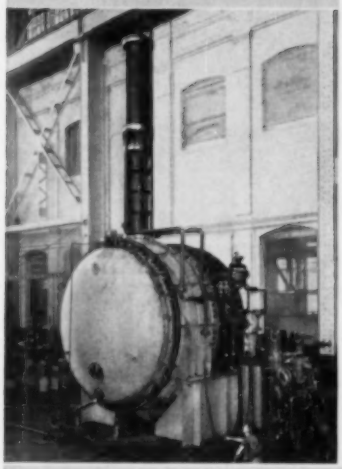




Four Allis-Chalmers 90-inch 50-16 fabricated steel butterfly valves used for pump check. These valves are equipped with the A-C full body rubber seat for dependable bubble-tight shut-off. Hydraulic cylinders, mounted on rugged crosshead mechanisms, provide smooth automatic operation.

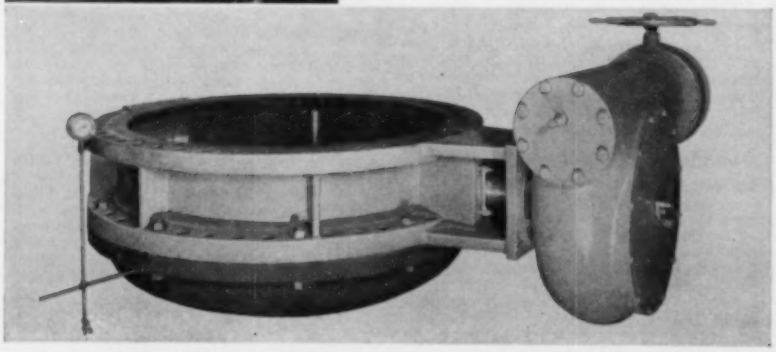
A-C adjustable-blade pump impellers are dynamically balanced after complete shop assembly and blade finishing.

ALLIS-CHALMERS



Allis-Chalmers 144-inch Dow valve with fabricated steel body and hydraulic operator provides tight closure in both directions. When valve is open, flow bypasses pumps or is diverted to pump sumps when valve is closed.

One of four A-C 72-inch AWWA Class 50-16 fabricated steel butterfly valves used on pump suction. These valves are equipped with the A-C full body rubber seat and A-C manual operator. This valve is shown being tested with 50 psi air under water to insure bubble-tight shut-off.



MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 61.

Rugged, Heavy-Duty Engines

768 These engines unleash a lot of power, help to make municipal maintenance work that much easier. WISCONSIN MOTOR CORP., MILWAUKEE 46, WIS., has prepared *Engine Bulletin* S-249 to give full facts on these heavy-duty 3- to 56-hp units. For copy, write DEPT. U-11.

Want an Ice Skating Rink?

769 Want to finance it without increasing taxes? Knowing the "Greenville Story" might help. It tells how this town of 10,000 people built a $70,000 outdoor ice rink and warming house completely financed without taxes. Write YORK CORP., 1706 S. GRANTLEY RD., YORK, PA.

Catches Speeders

770 Courts recognize evidence obtained by use of the Dowden Speed Recorder, a one-man operated, portable unit that can be used around the clock to snare speeders. It indicates exact car speed. Write NATIONAL RECORDERS, 7646 LYNDALE AVE. S., MINNEAPOLIS 23, MINN.

Gas Leakage Problems?

771 Need help in solving them? HEATH SURVEY CONSULTANTS, ZERO LAUREL AVE., WELLESLEY HILLS, MASS., which locates gas leaks for over 650 gas companies in the United States and Canada, will be glad to help.

Want to Finance a New Municipal Water Supply?

772 Wondering about the best way to finance it? Why not ask the man at THE CHASE MANHATTAN BANK, 1 CHASE MANHATTAN PLAZA, NEW YORK 15, N. Y. and get the skill, experience, and efficiency that will properly assist you?

Portable Water Coolers

773 HORTON PRODUCTS, INC., P. O. BOX 7156, MEMPHIS 18, TENN., announces availability of new catalog sheets on its four new plastic-lined water coolers, which come in 2, 3, 5 and 10-gallon sizes and can be used for either hot or cold liquids.

Aid to Solving Traffic, Street Signing Problems

774 LYLE SIGNS, INC., 2722 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINN., manufacturer of quality street marker and traffic control signs offers a sign service to help you specify the sign and material for the particular application. Ask, also, for *Sign Manual* B-55.

Engineering Reproduction and Drafting Film

775 Cronaflex has been developed by duPont to enable engineers to reproduce topographic and engineering data with the quality and accuracy of original material. For free booklet describing the use of Cronaflex in mapping, and information on full line of Cronaflex films, write E. I. DU PONT DE NEMOURS & CO., INC., PHOTO PRODUCTS DEPT. AC-5, WILMINGTON 98, DEL.

New Hi-Capacity Submersible

776 From SUMO PUMPS, INC., 23 BROWN HOUSE RD., STAMFORD, CONN., comes word of a new line of 8-inch, Series F, high efficiency submersible pumps, available in sizes from 10-50 hp and in capacities from 150-550 gpm. All have bronze bowls and impellers.

(See page 60 for more Bulletins)

POKER? Play to win!

How would you play this hand?

One chance in five to fill this flush, so be sure the pot is at least five times as big as the bet. If you haven't passed openers, raise. In general, a timid "calling" game is a losing game. Play percentages, but push them hard.

Here's a sure winner from FORD:

Latest addition to the world famous Fordson diesel line of tractors—the new Fordson Super Major. New disc brakes, differential lock, comfort seat and many other new features give a new peak in Fordson performance.

Still the same reliable engine, however—the dependable 42.6 drawbar H.P. engine which has earned a reputation for fuel economy unmatched by any other engine in its class.

Fordson Dexta Diesel tractor is better, too. Improved hydraulic system, transmission and styling make it a better buy than ever before. Get details from your Ford Tractor Dealer, or write:

Tractor and Implement Division
Ford Motor Company
Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

Your City Can Improve Services and Reduce Costs

...by taking advantage of the improved municipal equipment offered below.

Write to address given or circle corresponding number on free post card on page 61.

Cuts Through Concrete in a Jiffy

776A The new Truco catalog is now available. It gives complete information on diamond drilling and sawing equipment that will speed up cutting through reinforced concrete and thus save money. Write MASONRY DRILLING DIV., WHEEL TRUEING CO., 2048-3200 W. DAVISON, DETROIT 38, MICH.

Cut Accounting Costs

777 Low-cost IBM 1401 data processing system can help you eliminate costly, time-consuming steps in your municipal tax accounting procedures. For full details, write IBM, DATA PROCESSING DIV., 590 MADISON AVE., NEW YORK 22, N. Y.

Front-End Loader Information

778 THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL., has prepared data on its Model H-30 Payloader, smallest 4-wheel drive loader in its fleet, which is full of big loader features. Also available are data on other models and allied equipment.

Floodlighting Handbook

779 . . . covering the selection, specification and installation of floodlights for parking lots and sports fields. Also aluminum lighting standards for streets and highways. Write THE SPERO ELECTRIC CORP., 20500 ST. CLAIR AVE., CLEVELAND 17, OHIO.

Increase Service Life of Traffic Signs

780 According to FLEX-O-LITE MFG. CORP., 8301 FLEX-O-LITE DRIVE, ST. LOUIS 23, MO., it can readily be done. Why not inquire about details of Stormcote maintenance program for your reflective traffic signs and markings?

Trash and Sewage Pump

781 Wherever viscous liquids, process sludges, slurries, sewage or muddy water must be pumped, the portable Flygt CS-100 three-phase electric submersible with 6-hp motor proves ideal. Let STANCO MFG. & SALES, INC., 1666 NINTH ST., SANTA MONICA, CALIF., supply details.

Automatic Traffic Control

782 NATIONWIDE TRAFFIC ENGINEERING PRODUCTS CORP., 2535 MT. CARMEL AVE., GLENSIDE, PA., reports that its new Movatron automatic traffic control system changes traffic patterns — automatically, quickly, safely, at desired intervals. Write for complete information.

Lights Up Traffic Danger Spots

783 You'll alert motorists and eliminate traffic risks in what were once bad accident spots with this improved reflective traffic delineator on the job. Get complete information from PRISMO SAFETY CORP., HUNTINGDON, PA., which claims for its new product unsurpassed sight distance, 100% greater angular visibility, top performance under condensation and moisture conditions.

Chemicals for Water, Sewage Treatment

784 Extensive information on chemical products for fluoridation, coagulation, dechlorination, corrosion control, and boiler water is available from GENERAL CHEMICAL DIVISION, ALLIED CHEMICAL, 40 RECTOR ST., NEW YORK 6, N. Y., primary producer of aluminum sulfate.

Keeps Track of Keys

785 A flexible, money- and time-saving yet secure system of key control is the subject of a 16-page booklet available from P. O. MOORE, INC., GLEN RIDDLE 29, PA.

Tough Ditching Job?

786 Want to dig clean, straight-sided trench precisely at lower cost? Then you'll no doubt want to send for complete line literature on the Gar Wood-Buckeye line of machines. Write GAR WOOD INDUSTRIES, INC., WAYNE, MICH.

Fire Hydrants

787 Compression-type hydrants that meet AWWA specifications and have standard types of inlet and outlet connections for pressures up to 150 pounds, as well as high-pressure, flush and warm climate hydrants are subjects of *Bulletins* H53 and H100. Write THE A. P. SMITH MFG. CO., EAST ORANGE, N. J.

Rugged Centrifugal Pumps

788 *Bulletin* WLP-160 gives full facts on lightweight WONDER-Lite pumps, which are perfectly suited for all kinds of dewatering jobs. They're available in 1½-, 2-, and 3-inch sizes. Write CONSTRUCTION MACHINERY CO., WATERLOO, IA.

Cast Iron Pipe

789 *Catalog* No. 54 will tell you just about everything you want to know about Super DeLavaud APCO cast iron pipe with the fast assembly ALTITE joint, as well as bell-and-spigot and mechanical joint. Stock sizes from 3 to 24 inches.

Trucks for Municipal Work

790 Ford's Tilt Cab Tandems for '61 offer increased load capacity, greater servicing ease, better maneuverability. For full story on these money-saving trucks, write FORD DIVISION, FORD MOTOR CO., P. O. BOX 638, DEARBORN, MICH.

Aspha't Patch-Force Unit

791 This combination is designed to deliver lowest cost street maintenance. It's a complete patching work unit comprised of truck, two men, and Essick road maintenance equipment. For details and specifications, write ESSICK MFG. CO., 1950 SANTE FE AVE., LOS ANGELES 21, CALIF.

$150 Cash Bonus—Limited Offer

792 To get this bonus, just purchase a new MF 204 Industrial tractor, 204 fork lift tractor, or 65 utility tractor; buy a new MF 202 industrial tractor or 202 fork lift tractor and get $100. For details, write MASSEY FERGUSON INDUSTRIAL EQUIPMENT, 12601 SOUTHFIELD RD., DETROIT 32, MICH.

Municipal Incinerator Stokers

793 The four new bar/key incinerator stokers in the new Brooklyn, N. Y., Hamilton Avenue incinerator plant will consume 1000 tons of refuse per 24 hours. They were custom-designed by ILLINOIS STOKER CO., ALTON, ILL. For details, write to DEPT. AC-661.

Packs in Refuse with Ease

794 A report from a Santa Ana, Calif., refuse collection company specifies a saving of at least $13,760 monthly with 32 Hydro E-Z Packs compared with the cost of operating open trucks—even though volume is 10% greater. For full story, write HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

(See page 64 for more Bulletins)

Learn how to avert Water Supply crises and other municipal problems. Get the information you need in a hurry with this reply card.

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

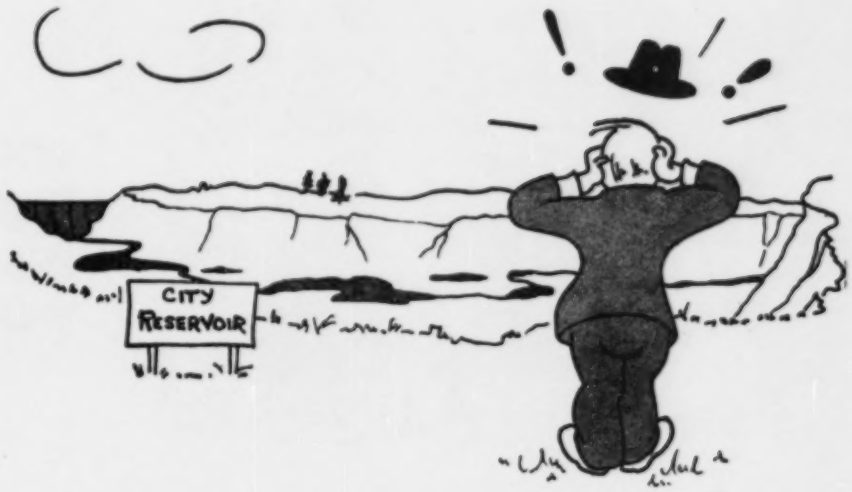
THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

NEW YORK 16, N. Y.

Readers' Service Dept.

DON'T LET THIS HAPPEN TO YOU



To THE AMERICAN CITY's Catalog Supply Department
Please send me literature on items numbered as follows, starting on page 52:

736	748	760	772	783	795	807	819	831	843	855	867	879
737	749	761	773	784	796	808	820	832	844	856	868	880
738	750	762	774	785	797	809	821	833	845	857	869	881
739	751	763	775	786	798	810	822	834	846	858	870	882
740	752	764	776	787	799	811	823	835	847	859	871	883
741	753	765	776A	788	800	812	824	836	848	860	872	884
742	754	766	777	789	801	813	825	837	849	861	873	885
743	755	767	778	790	802	814	826	838	850	862	874	886
744	756	768	779	791	803	815	827	839	851	863	875	887
745	757	769	780	792	804	816	828	840	852	864	876	888
746	758	770	781	793	805	817	829	841	853	865	877	889
747	759	771	782	794	806	818	830	842	854	866	878	

I would also like to receive manufacturers' booklets on .....

.....

.....

.....

Name: (Please Print) .....

Title: .....

Address: .....

..... 6-61

A Listing of Your Business Connection is Important

To THE AMERICAN CITY's Catalog Supply Department
Please send me literature on items numbered as follows, starting on page 52:

736	748	760	772	783	795	807	819	831	843	855	867	879
737	749	761	773	784	796	808	820	832	844	856	868	880
738	750	762	774	785	797	809	821	833	845	857	869	881
739	751	763	775	786	798	810	822	834	846	858	870	882
740	752	764	776	787	799	811	823	835	847	859	871	883
741	753	765	776A	788	800	812	824	836	848	860	872	884
742	754	766	777	789	801	813	825	837	849	861	873	885
743	755	767	778	790	802	814	826	838	850	862	874	886
744	756	768	779	791	803	815	827	839	851	863	875	887
745	757	769	780	792	804	816	828	840	852	864	876	888
746	758	770	781	793	805	817	829	841	853	865	877	889
747	759	771	782	794	806	818	830	842	854	866	878	

I would also like to receive manufacturers' booklets on. . . . . .

. . . . . .

. . . . . .

. . . . . .

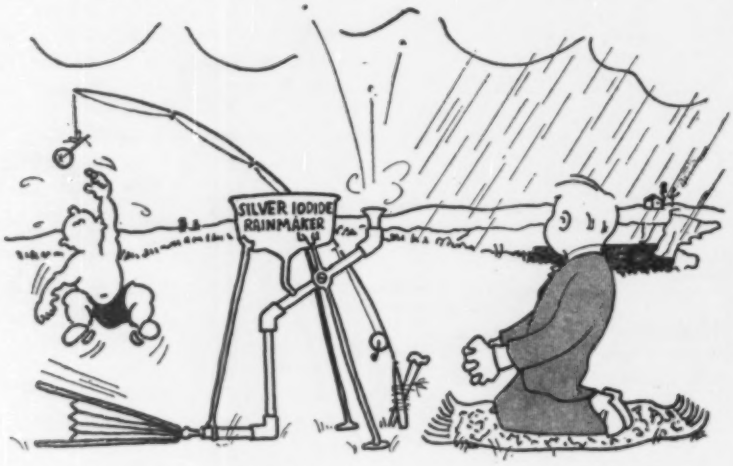
Name: (Please Print). . . . . .

Title:. . . . . .

Address:. . . . . .

. 6-61

A Listing of Your Business Connection is Important



WHEN YOU WANT RESULTS QUICKER THAN THIS . . .

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

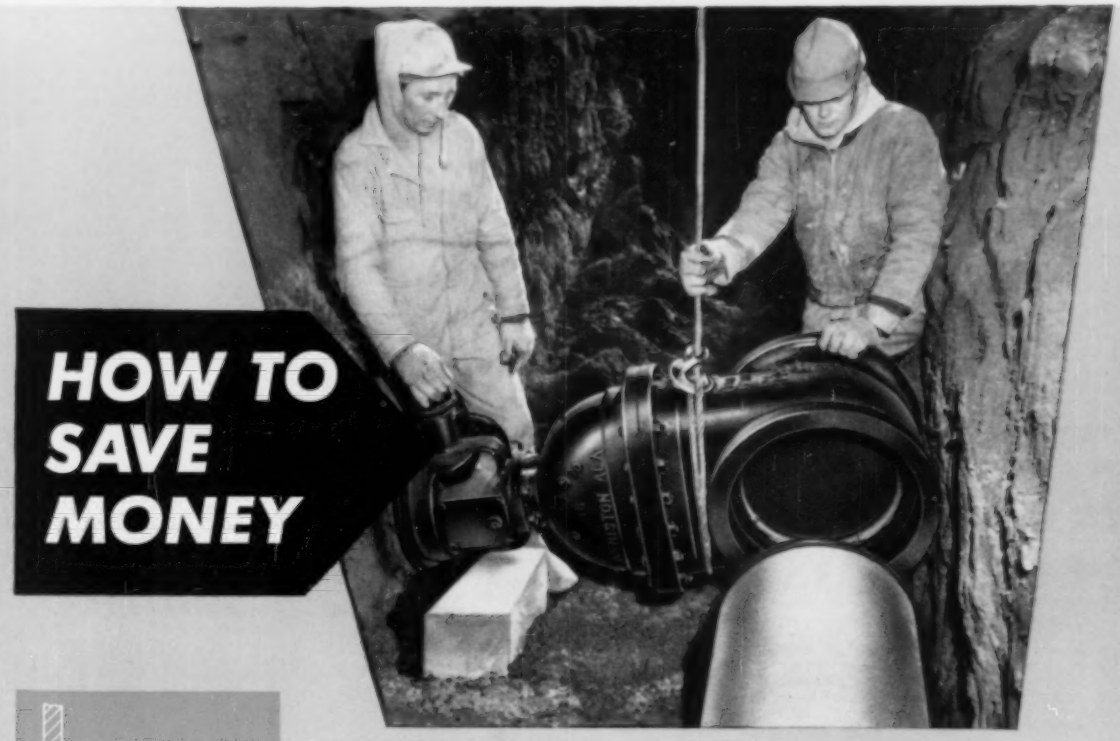
THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

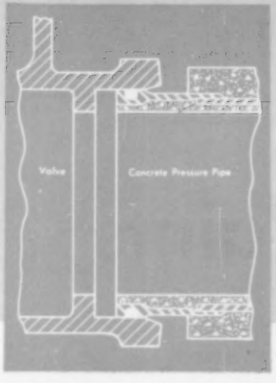
NEW YORK 16, N. Y.

Readers' Service Dept.

save time, effort and be sure of performance by using this reply card.



HOW TO SAVE MONEY



Cross section drawing to show position of concrete pipe spigot entering the hub of valve.

Use M&H Hub-end, O-ring Valves for Concrete Pipe NO ADAPTERS NEEDED

Eliminating the need of adapters when installing a valve in a concrete pressure pipe line saves both the purchase price and the installation expense of adapters. For a large size valve this often amounts to hundreds of dollars. That is why water works management, engineers and municipal officials are welcoming the advent of a valve with special hubs for use with concrete pipe. This valve employs an O-ring gasket to connect the valve hub directly to the spigot end of the concrete pipe. It was developed and now is manufactured by M&H Valve and Fittings Company.

This new valve for concrete pipe meets AWWA standards in every respect and is furnished in sizes 12″ through 42″. The valve gaskets are the same as the gaskets used for concrete pipe joints. For additional information, write for illustrated descriptive Circular No. 26.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

A WALWORTH SUBSIDIARY

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 61.

Automatic Sprinkler Systems

795 For information on a complete line of turf valves and underground sprinkling system equipment that will reduce the cost of landscape care, write RAINY SPRINKLER SALES (in Midwest and East), DIV. OF L. R. NELSON MFG. CO., PEORIA, ILL. or NATIONAL RAIN BIRD SALES & ENGINEERING CORP. (in West), P. O. BOX 547, AZUSA, CALIF.

Power for Municipal Plants

796 Fifteen mgd—that's what's pumped in the Joliet, Ill., sewage treatment plant. Powering the sewage pumps are three ROIline engines using sewage gas for fuel. For full story, write WAUKESHA MOTOR CO., WAUKESHA, WIS.

Traffic Signs

797 Die embossed steel traffic signs with baked enamel finish are rust resistant, cost less and last longer. To learn full details write to any of these companies: MIRO-FLEX CO., INC., 1824 E. 2ND ST., (BOX 514) WICHITA 14, KANS.; NSE SIGNS AND STAMPINGS, P. O. BOX 1069, BIRMINGHAM 1, ALA.; LYLE SIGNS, INC., 2720 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.; GOPHER STAMP AND DIE CO., CHICAGO AVE. AND CUSTER ST., ST. PAUL 7, MINN.; GRIMM STAMP AND BADGE CO., 8105 ROSALIE AVE., ST. LOUIS 17, MO.

Vitrified Clay Sewer Pipe

798 An easy way to be brought up to date on what's new in vitrified clay sewer pipe is to send for full information on the new factory-made compression joints on clay pipe. Write NATIONAL CLAY PIPE MANUFACTURERS, INC., 1028 CONNECTICUT AVE., N. W., WASHINGTON 6, D. C.

Time Stamps, Recorders

799 Municipal time keeping is made easier, time leaks are eliminated, and efficiency increased in all departments when Lathem time recording equipment is on the job. For full-line catalog, write LATHEM TIME RECORDER CO., 92 THIRD ST., N. W., ATLANTA, GA.

Cleans Catch Basins

800 A new brochure, available from GOOD ROADS MACHINERY CORP., MINERVA, OHIO, describes the features and characteristics of the Scavenger, a multipurpose unit which vacuums leaves and debris and cleans catch basins in minutes to 8-foot depths.

New Water Meter

801 Model 60 with sealed, magnetically driven register and gear train construction, is soon to be introduced by NEPTUNE METER CO., LIQUID METER DIV., 47-25 34TH ST., LONG ISLAND CITY 1, N. Y. It incorporates 3 money-saving features that protect both present and future meter investments.

Aerial Towers

802 These units take the stretch out of overhead maintenance jobs, enable them to be done faster, at less cost, and with greater safety. Current catalog literature from EQUIPMENT DIVISION, YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO, will show you there's a Strato-Tower to reach your specific requirements.

What's New in Metal Grating

803 That's something that Irvico can tell you about, for it produces 147 different mesh designs for a wide variety of municipal, industrial, architectural and decorative applications. Write IRVING SUBWAY GRATING CO., INC., 5030 27TH ST., LONG ISLAND CITY 1, N. Y.

Floating Cover Digesters

804 *Catalog* 332 gives full facts on these floating covers, which effectively control and accelerate action in digestion tanks, eliminating odors and collecting gas for heating and power purposes. Write PACIFIC FLUSH TANK CO., 4241 RAVENSWOOD AVE., CHICAGO 13, ILL.

Coin Counter and Sorter

805 Low cost, electrically operated and fully portable, Model CS-100A counts and sorts 15,000 coins per hour. It's well suited for handling change from parking meter collections and toll operations. Write STANDARD CHANGE-MAKERS, INC., 422 E. NEW YORK ST., INDIANAPOLIS 2, IND.

Got to Lock It?

806 Why not Master lock it? In this catalog you'll find padlocks for every municipal protection need — water works, power plants, gates, tool and control boxes, etc. Write MASTER LOCK CO., MILWAUKEE 45, WIS.

For the Man Who Buys Fence

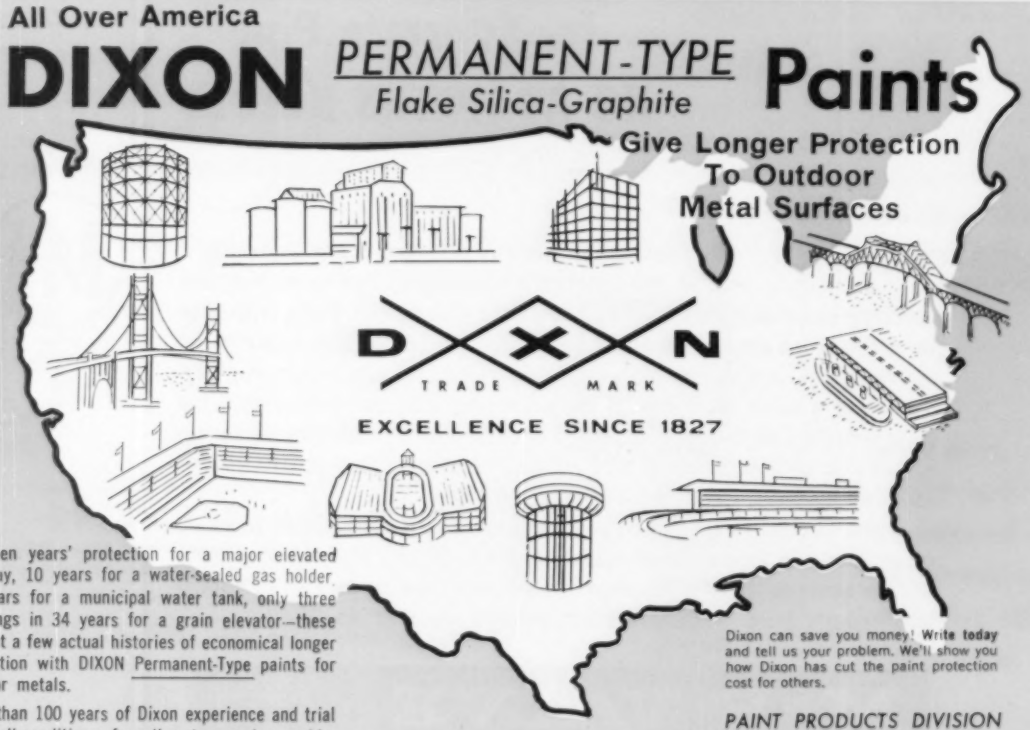
807 When you buy fence you buy property protection. That's why it's important to know how to buy fence, pertinent information and pointed questions to ask. The maker of Cyclone chain link fence can tell you just that. Write AMERICAN STEEL & WIRE DIVISION OF UNITED STATES STEEL, 614 SUPERIOR AVE., N. W., CLEVELAND 13, OHIO.

(See page 67 for more Bulletins)

All Over America

DIXON *PERMANENT-TYPE Flake Silica-Graphite* **Paints**

Give Longer Protection To Outdoor Metal Surfaces



Fourteen years' protection for a major elevated highway, 10 years for a water-sealed gas holder, 15 years for a municipal water tank, only three paintings in 34 years for a grain elevator—these are but a few actual histories of economical longer protection with DIXON Permanent-Type paints for outdoor metals.

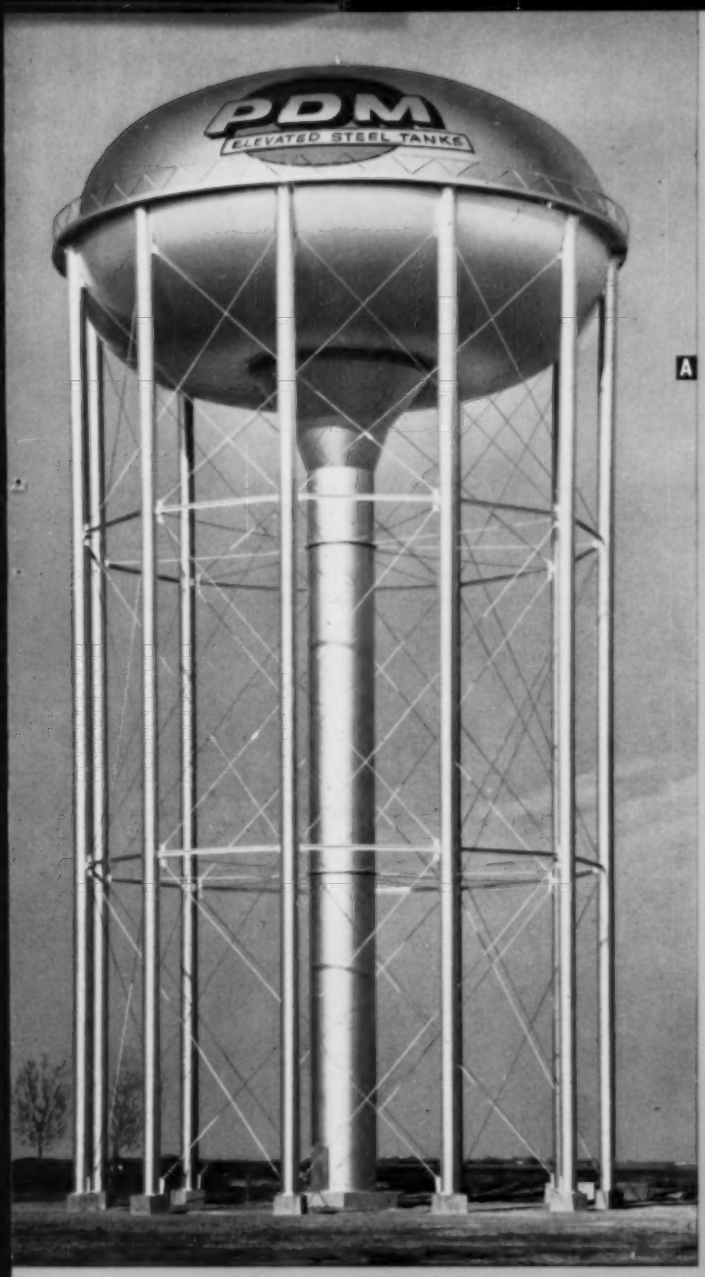
More than 100 years of Dixon experience and trial under all conditions of weather, temperature and industrial corrosion have developed **the** outdoor paints that can cut **your** costs with **longer protection!**

Dixon can save you money! **Write today** and tell us your problem. We'll show you how Dixon has cut the paint protection cost for others.

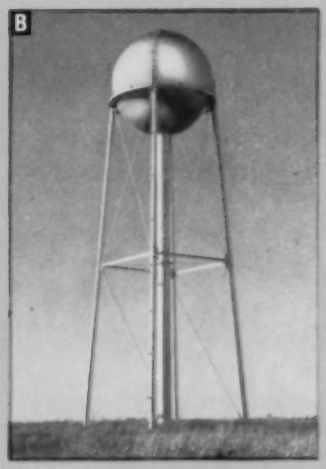
PAINT PRODUCTS DIVISION

THE JOSEPH DIXON CRUCIBLE COMPANY

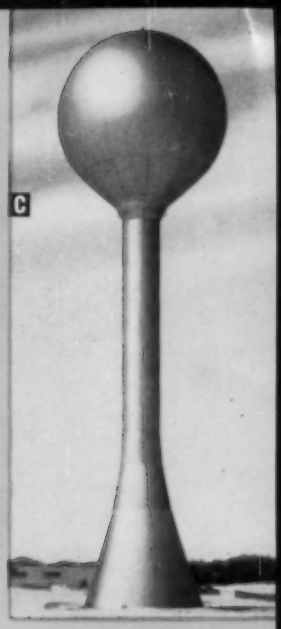
Jersey City 3, New Jersey



A



B

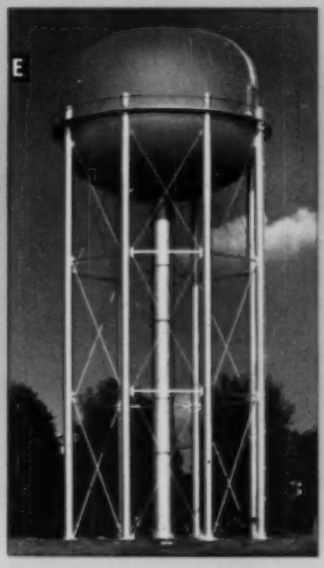


C

ALL YOU NEED TO KNOW

about the best in water storage!

D



E

These PDM Elevated Steel Tank types cover the entire range of modern municipal water storage requirements, from metropolis to village. Each represents the leading value in its field of application—achieved through almost 65 years of PDM specialization in elevated tank design and construction • Superior craftsmanship and guaranteed satisfaction protect your investment when you specify PDM. Consult us on your capacity and service needs: let us send you our illustrated 20-page brochure. Just write the district office nearest you.

A Torospherical
B Waterball
C Pedestal Sphere
D Pedestal Spheroid
E Double Ellipsoidal

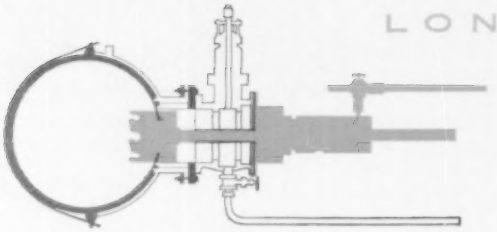
PDM
ELEVATED STEEL TANKS

PITTSBURGH-DES MOINES STEEL COMPANY

Plants at PITTSBURGH, WARREN, BRISTOL, PA. • BALTIMORE • BIRMINGHAM • DES MOINES • PROVO, UTAH • CASPER, WYO. • SANTA CLARA, FRESNO, STOCKTON, CALIF.

Sales Offices

PITTSBURGH (25)	Neville Island	PROVO, UTAH	P. O. Box 310	CHICAGO (3)	679 First National Bank Bldg.
WARREN, PA.	P. O. Box 660	SANTA CLARA, CALIF.	P. O. Box 329	ATLANTA (5)	361 East Paces Ferry Rd., N.E.
BALTIMORE (26)	P. O. Box 3459, Curtis Bay Station	EL MONTE, CALIF.	P. O. Box 2012	DALLAS (1)	Suite 1703, Southland Center
BIRMINGHAM (8)	P. O. Box 8641, Ensley Station	NEW YORK (17)	200 East 42nd Street	DENVER (2)	323 Railway Exchange Bldg.
DES MOINES (8)	1015 Tuttle Street	NEWARK (2)	744 Broad Street	SEATTLE (1)	500 Wall Street



LONG-TERM ECONOMY

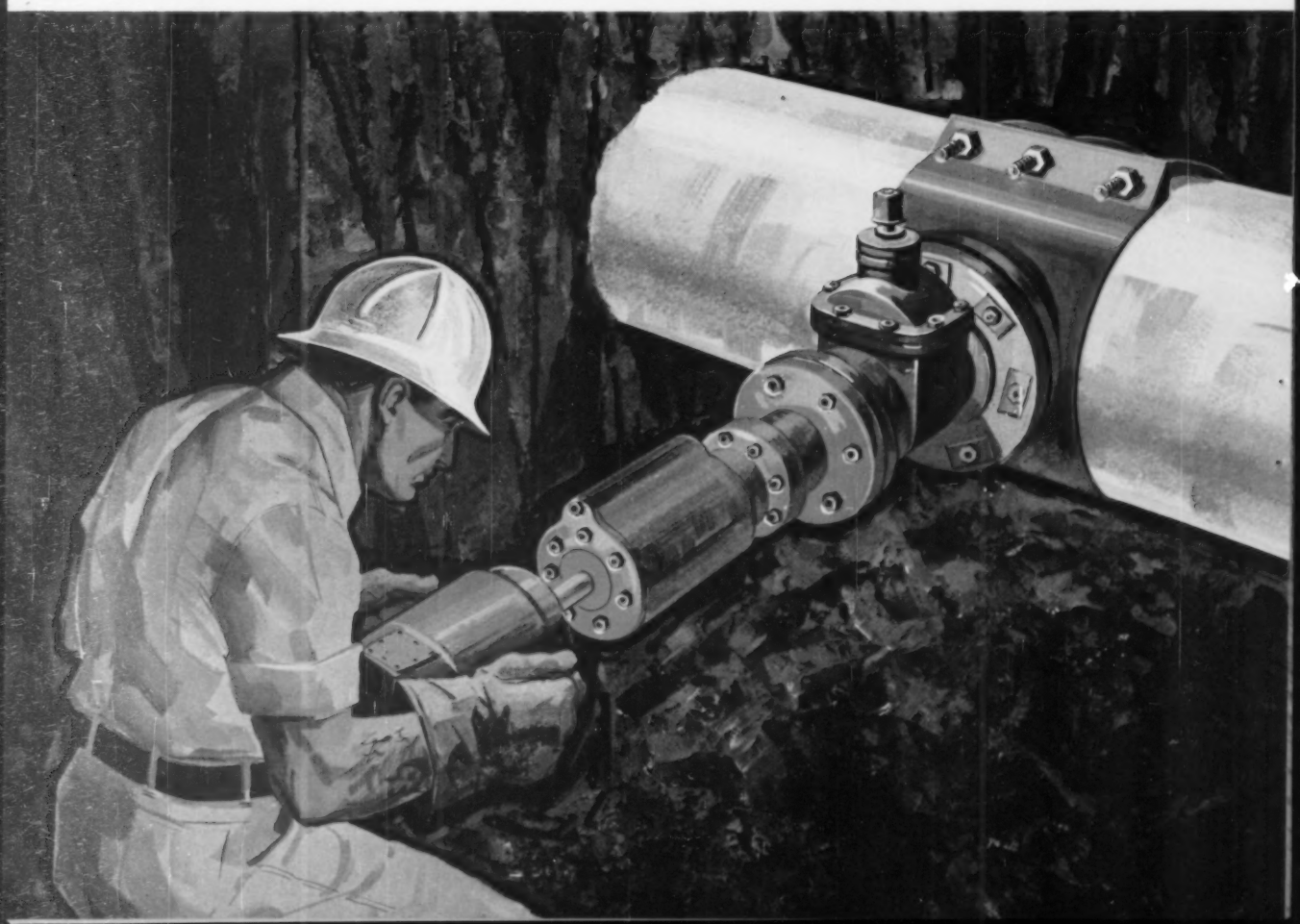
TAPPING UNDER PRESSURE

Pressure tapping Concrete Pressure Pipe is easy and economical. A small crew working with standard equipment can install a new outlet in a concrete pipeline in a few hours, without interrupting service to your customers. ■ Saddle type outlets are readily available for installation by your own forces or by others. Properly installed with protective concrete coatings, these outlets will be as durable and dependable as the pipeline itself. ■ To keep pace with the constant increase in demand for water, most municipalities and water agencies in the West have successfully expanded existing water supply systems by pressure tapping their concrete pipelines. ■ In addition to other assistance an American sales engineer will be glad to show you a motion picture film demonstrating the tapping procedure. The simplicity of pressure tapping is another reason why Concrete Pressure Pipe means long term economy for you.

American Pipe and Construction Co. • Los Angeles • San Diego • Hayward • Portland
Bogota, Colombia / **American Concrete Pipe Co. (subsidiary)** • Phoenix • Albuquerque

A MEMBER OF THE AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

American PIPE AND CONSTRUCTION CO.



FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 61.

Water Purification Equipment

808 By writing to ROBERTS FILTER MFG. CO., 601 COLUMBIA AVE., DARBY, PA., you can get facts on a dependable line of equipment for water filtration and softening plants. Included are horizontal pressure filters, Zeolite water softeners and swimming pool recirculation plants.

No Adapters Needed

809 Now you can install a valve in a concrete pressure pipe line *without* the need of adapters. It's made possible by M & H Hub-end, O-ring valves. For full facts, request Circular No. 26. Write M & H VALVE AND FITTINGS CO., ANNISTON, ALA.

Speeds Overhead Maintenance

810 The new LD-40 light-duty Elbow with high dielectric strength and offset yoke that increases versatility and working range of the unit, makes municipal overhead maintenance work safer and speeds it up. For details, write HOLAN CORP., 4100 W. 150TH, CLEVELAND 35, OHIO.

Speeds Pipe Installations

811 Here's a unit that combines pushing and pulling operations in one machine. The TROJAN MANUFACTURING CO., 1113 RACE DRIVE, TROY, OHIO, reports that it installs or renews pipe under pavement in less time than is required by any other machine. Details on request.

Elevated Water Storage

812 This illustrated 20-page brochure tells all about PDM elevated steel tank types, which cover the entire range of municipal water storage requirements—from village to metropolis. Write PITTSBURGH-DES MOINES STEEL CO., NEVILLE ISLAND, PITTSBURGH 25, PA.

New Rear-Engine Trucks

813 There's new utility in the Corvair 95, plenty of cargo room, maneuverability, and low 29½-inch rear loading height. But why not let CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICH. give you the full facts that add up to bigger hauling profits?

Prestressed Concrete Tanks

814 This brochure explains why prestressed concrete should be considered in any water storage tank planning. It points out the advantages of such tanks in terms of service life, costs, maintenance, etc. Write THE PRELOAD CO., INC., 355 LEXINGTON AVE., NEW YORK 17, N. Y.

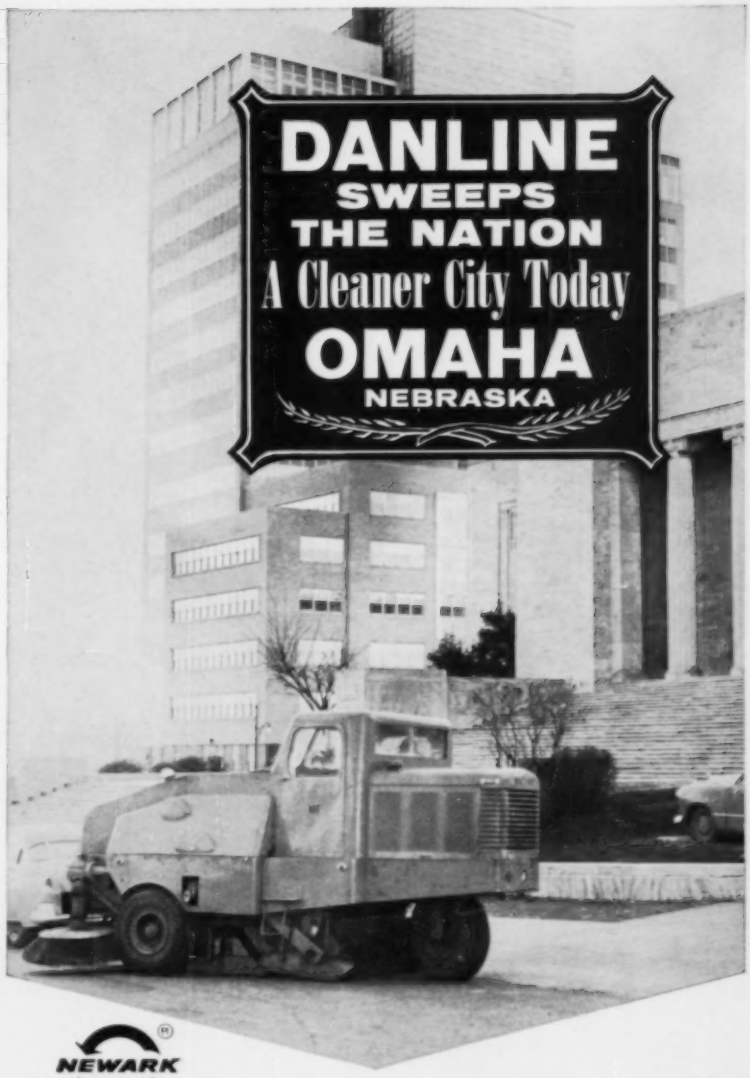
For Better Tasting Water

815 Literature on Triangle Brand Cooper Sulfate explains how this product makes water supplies more palatable, controls root growths and slime in sanitary sewers and storm drains without damaging trees. Write PHELPS DODGE REFINING CORP., 300 PARK AVE., NEW YORK 22, N. Y.

River Crossing Pipe

816 AMERICAN Molox Ball Joint pipe for river crossings and other marine service is the subject of a new 32-page illustrated catalog, available from AMERICAN CAST IRON PIPE CO., BIRMINGHAM, ALA. Includes detailed description of the joint, various applications and installation methods, dimension and weight tables and assembly instructions.

(See page 70 for more Bulletins)



NEWARK®

Today, Omaha has everything! The 14 million dollar Joslyn Memorial, devoted to culture, one of the largest livestock markets, the home base of SAC, headquarters of the great Union Pacific Railroad and Danline wire sweeping brushes for cleaner streets at lower costs per curb mile. Mr. Ernest Mockelmann, Supt. of Dept. of Public Works had this to say, "On each of our sweepers we average 1200 to 1300 miles of wear and this makes the city sold on Danline." We at Newark invite your inquiry. Contact the factory or call your nearest Danline Dealer.

Leadership Proved Through Performance!

NEWARK BRUSH COMPANY

260 MICHIGAN AVE., KENILWORTH, N. J.

59-49

JOHN DEERE

Get all-job economy and top performance with

New John Deere 2010 Wheel Power

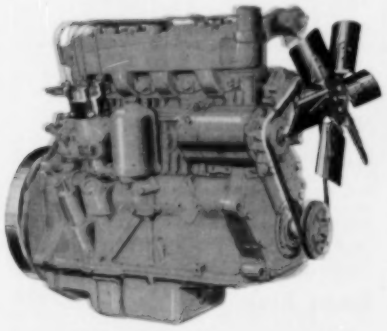
Now reporting for duty on earthmoving and construction jobs of all kinds, new John Deere "2010" Wheel Units provide the advantages of 52-engine-horsepower performance at remarkably low cost. New productive power is combined with high maneuverability and full operator comfort to insure top work capacity on any assignment. Heavy-duty design throughout provides the kind of day-after-day dependability required to hold maintenance costs down, keep projects on schedule.

For Municipalities, public utilities, earthmoving contractors, whether fleet owners or single-unit operators, versatile new "2010" units are a sound investment. These all-new loaders and equipment combinations are the economical answer to jobs from commercial construction and street repair to handling sand, gravel, or other bulk materials.

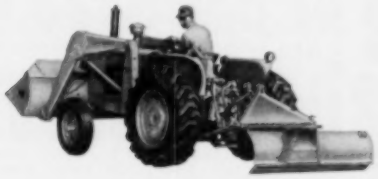
On every job, new "2010" units pay dividends in ease of operation. Power steering helps boost productivity on landscaping, loading and material handling work. New single-lever loader control helps shave seconds off work cycles. Two-lever backhoe control, commanding a responsive, reliable hydraulic system, means top production per hour.

Advanced transmission with constant-mesh gears provides eight speeds forward, three reverse to master any power requirement.

For detailed specifications on new John Deere "2010" Wheelpower, a demonstration on your job, contact your John Deere Dealer through the classified telephone directory. John Deere, 3300 River Drive, Moline, Illinois.



John Deere-built gasoline and Diesel engines feature 4-cylinder, 4-cycle, overhead valve design, high efficiency through a wide throttle range.



A wide choice of power-matched John Deere Landscape Equipment provides start-to-finish efficiency. Disks, rippers, rear blades, a landscape rake, scarifier-scraper combination and landscape seeder provide full versatility. Flail mower also available.

"2010" construction and earthmoving equipment, John Deere designed and built, includes standard and heavy-duty loaders, center-mount and 5-position backhoes, and an all-purpose sideboom unit with hydraulic counterweights for pipelaying work.

JOHN DEERE LOADERS BULLDOZERS BACKHOES AND EARTHMOVING EQUIPMENT

JOHN DEERE

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 61.

Gives Complete Flow Information

817 *Technical Bulletin* CF-300 reports on a new, miniature strip chart that gives complete flow information (indication, totalization, recording) in less than ¼ panel space. Prepared by HERSEY-SPARLING METER CO., 225 N. TEMPLE CITY BLVD., EL MONTE, CALIF.

Steel Water Pipe

818 ARMCO DRAINAGE & METAL PRODUCTS, INC., 4101 CURTIS ST., MIDDLETOWN, OHIO, is making available information on a "Water Pipe Package" aimed at delivering savings in pipe delivery time, installation expense and initial cost of field joints.

Harbor and Airport Light

819 This new, high-powered, portable harbor and airport light is designed for all types of marine work, shore protection, obstruction marking, other harbor uses and airport requirements. For details and specifications, write ELECTRONIC SPECIALTIES CO., BATAVIA, ILL.

Pipe Detection Instruments

820 In addition to literature on the Model LC-5T Dualtronic pipe-leak locator and Model TR-1 Signalmaster pipe locator, for municipal and utility use, THE GOLDAK CO., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF., is offering a discussion book, entitled "Locating Underground Pipe."

Swimming Pool Filters

821 A 4-page brochure illustrates and gives specifications for vacuum diatomaceous earth filters, suitable for the smallest neighborhood or largest municipal installation. For a copy, write FIBRALUME CORP., 2569 RIVERSIDE DRIVE, COLUMBUS 21, OHIO.

"Reflectorize" Away Your Traffic-Hazards

822 All ingredients necessary to satisfactorily reflectorize and sharply delineate traffic hazards are included in this kit. *Catalog* V-160 gives full facts, also details V-S-R, a reflectorized marking material for vertical surfaces. Write CATAPHOTE CORP., TOLEDO 10, OHIO.

Noiseless Manhole Covers

823 These manhole covers sit firmly on their corner lugs, never rattle or clatter even under the heaviest traffic. They're a National Noise Abatement Council Winner. For engineering details, write THE SILENT KNIGHT CO., 1614 N. DIXON CIRCLE, CINCINNATI 24, OHIO.

Protect Outdoor Metals

824 Current catalog literature from THE JOSEPH DIXON CRUCIBLE CO., PAINT PRODUCTS DIV., JERSEY CITY 3, N. J., supplies information on permanent-type paints developed to give longer protection to outdoor metal surfaces and thus cut maintenance costs.

Power Street Sweepers

825 Officials charged with the responsibility of municipal housekeeping in municipal parking lots, around civic centers, parks, garages, sports areas, etc., will want to obtain a copy of this Power Sweeper brochure from WAYNE MFG. CO., 3712 E. LEXINGTON ST., POMONA, CALIF.

Slurry and Chemical Feed Equipment

826 The ENGINEERING DEPT., MEC-O-MATIC, INC., 2756 S. W. 28 LANE, MIAMI 33, FLA., announces availability of a series of bulletins on devices for feeding slurries and chemicals at water and sewage treatment plants and at public swimming pools.

Sawed Excavations Booklet

827 . . . contains valuable information and illustrations showing the advantages of using concrete saws in many and varied applications including maintenance of walks, streets, parks, swimming pools and airports. Write CLIPPER MFG. CO., 2800 WARWICK, KANSAS CITY 8, MO.

Goes After Litter

828 With a Tarco "Litter-Getter" on the job, you can be certain that pick up of leaves and litter is rapid and efficient. There are three models of these powerful vacuum units. For literature, write TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

Earthmoving News

829 . . . from ALLIS-CHALMERS MFG. CO., CONSTRUCTION MACHINERY DIV., MILWAUKEE 1, WIS., comes in the form of the 184-hp, 28,400-pound TL-30, a new tractor loader with 10,500-pound carry capacity, 2½- to 6-cubic yard buckets, and turbocharged diesel engine.

Sewer Cleaning Equipment

830 Thirty-six page *Catalog* No. 61 lists latest improvements, describes and gives applications for the full complement of sewer cleaning equipment and accessories available from EXPANDING SEWER MACHINE CO., 108 E. WALNUT ST., NAPPANEE, IND.

Heavy-Duty Sewage Pump

831 Literature from KENCO PUMP DIV., THE AMERICAN CRUCIBLE PRODUCTS CO., LORAIN, OHIO, introduces the new Model 139 sump pump, which features a heavy-duty ½-hp motor and special nonclog 2-vane cast-bronze impeller, and can pump 8600 gph at 5-foot head; 6900, at 10-foot head.

Littleford's New Roller

832 Model 9S-14 is a self-propelled, 9-wheel pneumatic tire roller with 3,225-pound wheel load and 96 psi ground pressure. Entire rear axle oscillates, as well as each pair of drive wheels. *Bulletin* MM-49 gives details; write LITTLEFORD BROS., INC., 453 E. PEARL ST., CINCINNATI 2, OHIO.

Roadway Valve Boxes

833 These sliding-type units are designed to reduce the danger of vehicles damaging valves and water mains. Lid and flange are cast iron, rest is noncorroding A.B.S. polymer. *Bulletin* WRVB-16 gives details. Write HANDLEY INDUSTRIES, INC., JACKSON, MICH.

How to Escape a Mud Trap

834 DANA CORP., TOLEDO 1, OHIO, recommends that cars and light trucks be equipped with limited slip differentials to prevent getting stuck in mud caused by spring rains and in snow. It has prepared a booklet which describes how and where the limited slip differential works.

Chlorinators for Water, Sewage Treatment

835 Chlorinators and chlorination control equipment, dry chemical feeders, lime slakers, purge meters and rotameters, evaporators, valves, and leak detectors—information on all available from WALLACE & TIERNAN INC., DEPT. 61.00-A, 25 MAIN ST., BELLEVILLE 9, N. J.

All-Around Sweeping Filament

836 Lightweight polypropylene Keystrand handles all types of street sweeping problems, provides more bristles per pound of material, cuts overall sweeping costs, has a low water absorption point. For literature, write KEYSTONE PLASTICS, INC., 280 BADGER AVE., NEWARK 8, N. J.

Submersible Pumps

837 *Bulletin* No. 202 gives facts on submersibles for wells as small as 6 inches; they're available in capacities from 30 gpm up. *Bulletin* No. 203 describes an In-Line submersible for booster pump applications. Both available from LAYNE & BOWLER, INC., MEMPHIS 8, TENN.

Underwater Lighting

838 New *Catalog Section* G includes illustrations, specifications and dimensions on cast bronze low-voltage swimming pool lights for use in new or existing concrete, gunite, tile, steel or fiberglass pools. Write STONCO ELECTRIC PRODUCTS CO., 333 MONROE AVE., KENILWORTH, N. J.

Speeds Billing Procedures

839 Installation of a National System has reduced monthly billing time for Solomon, Kans. by 75%. It also eliminates errors and turns in a savings of $600 a year. For details on the features of a National System, write THE NATIONAL CASH REGISTER CO., DAYTON 9, OHIO.

New, Synthetic Bitumen

840 . . . available in a wide selection of permanent colors, can be used over new or existing asphalt or concrete pavements and assures a hard wearing surface that's easy to maintain. Handling is similar to that of asphalt in a hot mix system. Write VELSICOL CHEMICAL CORP., 330 E. GRAND AVE., CHICAGO 11, ILL.

Epoxy Resin Bond for Concrete

841 STA-CRETE, INC., 115 NEW MONTGOMERY ST., SAN FRANCISCO, CALIF., reports that there's a Sta-Crete formula that will bond almost anything to anything and tells you about it in a 12-page folder. Ask, also, about a catalyst-activated caulking compound for swimming pools and reservoirs.

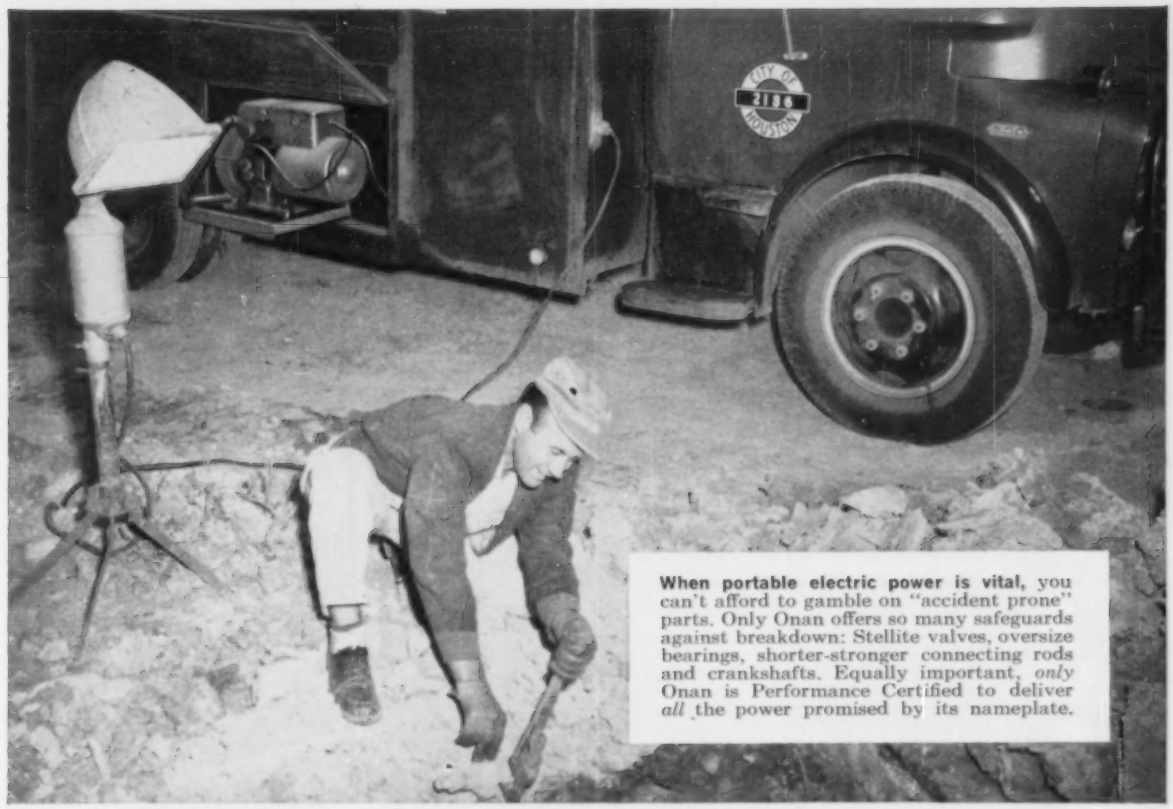
Floodlight Bulletin

842 Just-issued *Bulletin* 2725 introduces a compact, highly efficient QUARTZ-beam floodlight, designed by CROUSE-HINDS CO., SYRACUSE 1, N. Y., for the quartz-iodine lamp. Specifications, photometric data and applications included.

New Rubber Seat Valve

843 HENRY PRATT CO., 319 W. VAN BUREN ST., CHICAGO 7, ILL. has prepared a 60-page catalog on the new Monoflange Mark-II valve, which fits conveniently between pipe flanges. Write for *Bulletin* 10; it contains all pertinent information.

(See page 73 for more Bulletins)



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

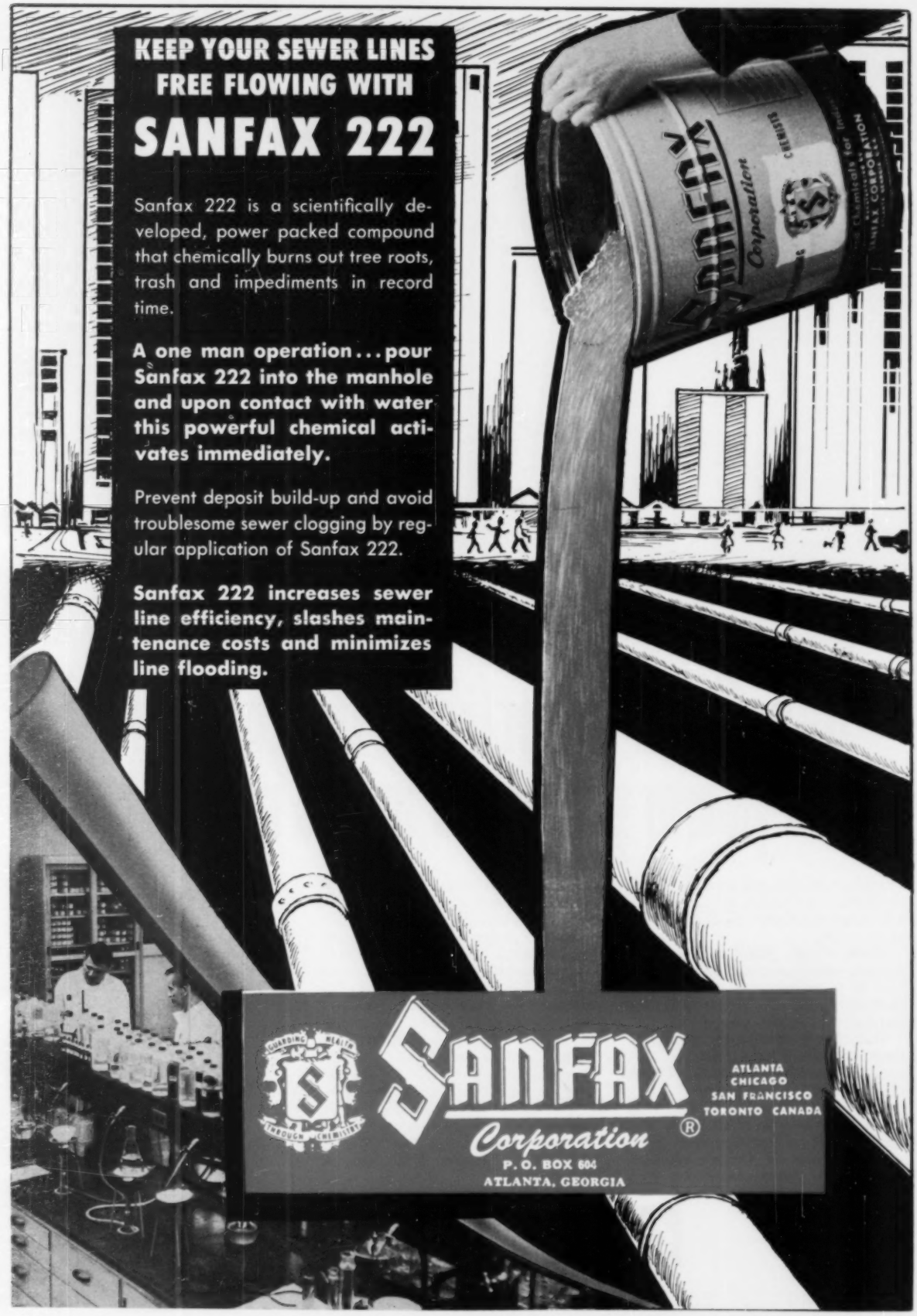
See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory
Onan
Onan

World's Leading Builder of Electric Power Plants

Onan

ONAN Division, Studebaker-Packard Corporation, 2615 University Ave. S. E., Minneapolis 14, Minn.


KEEP YOUR SEWER LINES FREE FLOWING WITH
SANFAX 222
Sanfax 222 is a scientifically developed, power packed compound that chemically burns out tree roots, trash and impediments in record time.
A one man operation... pour Sanfax 222 into the manhole and upon contact with water this powerful chemical activates immediately.
Prevent deposit build-up and avoid troublesome sewer clogging by regular application of Sanfax 222.
Sanfax 222 increases sewer line efficiency, slashes maintenance costs and minimizes line flooding.
SANFAX
Corporation
P. O. BOX 604
ATLANTA, GEORGIA
ATLANTA
CHICAGO
SAN FRANCISCO
TORONTO CANADA

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 61.

One County's Solution

844 "A County Builds Soil-Cement" tells how a county solved its road maintenance problems through a planned program of soil-cement construction. The 16 mm, 20-minute color, sound film can be obtained from PORTLAND CEMENT ASSOCIATION, 33 W. GRAND AVE., CHICAGO 10, ILL.

Husky Graders

845 Rugged graders built to put more workpower at the blade are the subject of latest catalog data offered by THE GALION IRON WORKS & MFG. CO., GALION, OHIO. Units range from 58 to 220 hp and weigh up to 42,000 pounds.

Bulletin 1-15

846 . . . gives full facts on accurate, dependable, maintenance-free pneumatic instruments that can help you run your water treatment plant more efficiently. For a copy, write THE FOXBORO CO., 956 NEPONSET AVE., FOXBORO, MASS.

Compaction Job?

847 Tough specifications? Want to complete it in fewer passes? Why not get the latest literature on the static, vibratory and pneumatic roller compactors in the line offered by AUSTIN-WESTERN CONSTRUCTION EQUIPMENT DIV., B-L-H, AURORA, ILL.

Plastic Pipe Saves the Day

848 There's a real story behind the 83,900 feet of tough, hard, corrosion-resistant rigid ABS pipe of Cycolac brand polymers that defied alkalized soils and "rescued" the Brighton, Colo., area when shallow wells went dry. To learn of it, write MARBON CHEMICAL division of BORG-WARNER, DEPT. 5, WASHINGTON, W. VA.

New Steam Cleaner

849 Oil-fired, portable Model 100 is designed for operations with limited cleaning needs or for larger operations requiring an auxiliary or standby which can be moved about with ease. For details, write MALSBARY MFG. CO., 845 92nd AVE., OAKLAND 3, CALIF.

Protective Fencing

850 *Catalog* 2141 gives the inside view of Anchor chain link fence, describes types, post setting, gates, construction, and applications. For a copy, write ANCHOR FENCE DIV., ANCHOR POST PRODUCTS, INC., 6500 EASTERN AVE., BALTIMORE 24, MD.

Shirt-Pocket Size Walkie-Talkie

851 Police and fire departments will find the transistorized Miniphone 400 a useful instrument, with range under normal conditions from ½ to 1½ miles (maximum up to 15 miles). For details on this self-contained radio transmitter and receiver, write ELECTRA INTERNATIONAL CO., 5415 YORK BLVD., LOS ANGELES 42, CALIF.

Updates Venturi Tube Accessory Bulletin

852 In *Bulletin* Ref. No. 110.20-2 B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE 1, R. I., gives descriptions and diagrams on straightening vanes, vent cleaners, flushing devices and special chambers—accessories that prevent flow disturbances and fouling of pressure connections in venturi meter installations.

Pocket-Sized Tapping Manual

853 . . . describes the step-by-step procedure for tapping prestressed concrete steel cylinder pipe under pressure, tells how small and large taps can be made quickly and safely with ordinary tapping tools and without interruption in service. Write PRICE BROTHERS CO., 1932 E. MONUMENT AVE., DAYTON 1, OHIO.

Wall-Mounted Chlorinator

854 Specification 70C3600 supplies data on a solution feed, vacuum-type wall-mounted chlorinator (Series 3600). Materials of construction, principles of operation, capacities, and rangeability are given along with a flow diagram and dimensional drawing. Write FISCHER & PORTER CO., 850 JACKSONVILLE RD., WARMINSTER, PA.

Submersible Pump Control

855 Floatless liquid level control for low water cutoff protection of submersible pumps and deep well turbines provides automatic water cutoff protection and allows the pump to operate efficiently at full capacity. For literature, write THE B/W CONTROLLER CORP., 2200 E. MAPLE RD., BIRMINGHAM, MICH.

New Street Lighting Luminaire

856 *Booklet* SA-8869, available from WESTINGHOUSE LIGHTING DIVISION, EDGEWATER PARK, CLEVELAND, OHIO, describes, gives applications and characteristics of the new Westinghouse 750- and 1000-watt mercury lamp street lighting luminaire, Type OV-50.

(See page 87 for more Bulletins)

FOUR TIMES A DAY

Your children's lives are protected by DIE EMBOSSED steel traffic signs. For just one-half cent per day your community can have the finest three dimensional life and limb protectors ever devised.

When you buy traffic signs be sure to specify DIE EMBOSSED, rust resistant steel with baked enamel finish. They cost less, last longer and give better visibility because they have that extra dimension . . . *d-e-p-t-h.*

MIRO-FLEX CO., INC.
1824 E. 2nd St. (Box 514)
Wichita 14, Kans.

NSE SIGNS AND STAMPINGS
P.O. Box 1069
Birmingham 1, Ala.

LYLE SIGNS, INC.
2720 University Ave. S.E.
Minneapolis 14, Minn.

GOPHER STAMP AND DIE CO.
Chicago Ave. and Custer St.
St. Paul 7, Minn.

GRIMM STAMP & BADGE CO.
8105 Rosalie Ave.
St. Louis 17, Mo.

ORDER DIRECT FROM THESE MANUFACTURERS

☐ Please send me a copy of your catalog.

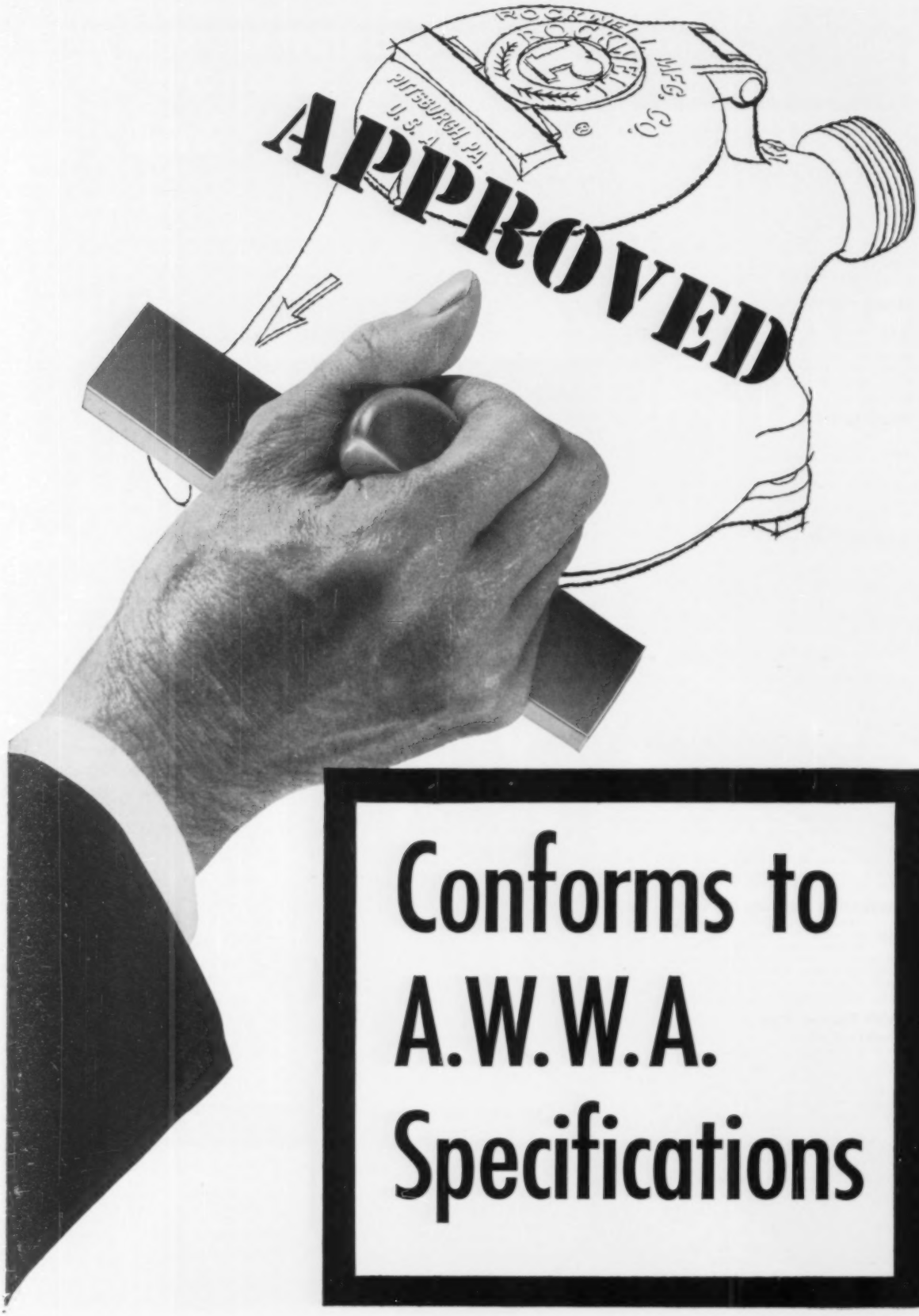
☐ Please furnish a quotation on the attached list of traffic signs.

Name_____

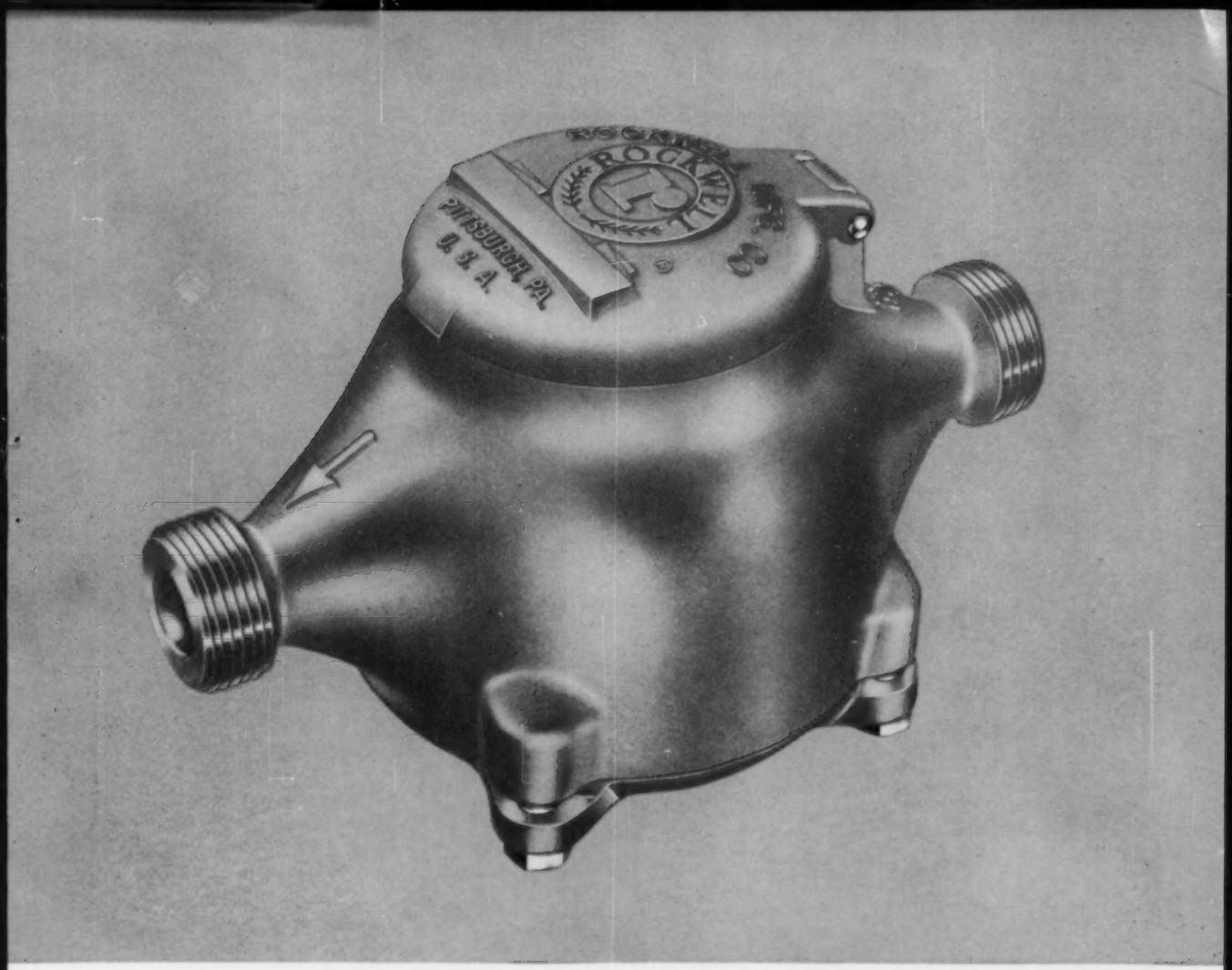
Title_____

Address_____

City_____ State_____



Conforms to A.W.W.A. Specifications



Rockwell Sealed Register* "Magnetic" Meters

Imitated, but never equalled!

For prompt shipment from warehouse stocks contact Rockwell Manufacturing Company, Dept. 159F, 400 N. Lexington Ave., Pittsburgh 8, Pa. In Canada: Rockwell Manufacturing Company of Canada, Ltd., Box 420, Guelph, Ontario.

*Trademark

SEALED REGISTER* METERS

another fine product by

ROCKWELL

C-E shows

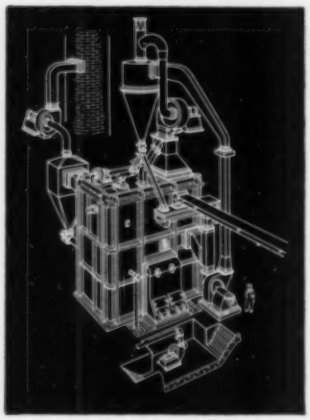
how one plant can handle 2 types

with considerable savings in

More and more communities—large and small—are looking into the possibilities of treating both refuse and sewage sludge at the same plant site. Aside from the obvious savings in land acquisition costs, the dual function plant offers many other benefits. Manpower and equipment can be combined to eliminate costly duplication. And the heat generated in burning either refuse or dried sludge can be used as an economical source of steam for heating or power merely by adding a C-E Waste Heat Boiler to the outlet end of the incinerator. This *is no cost heat.*

Heart of the C-E 2-in-1 disposal system is the C-E Traveling Grate Incinerator Stoker. Using "continuous processing" the C-E Incinerator Stoker requires only minimum attention and maintenance. Refuse (alone, or mixed with dried sludge) is fed into the self-sealing, non-clogging hopper. It is reduced to a sterile ash, free from clinkers and automatically discharged to the ash pit. This ash is suitable for use as a sanitary land fill.

Heat from the burning waste is used to dry sludge in the C-E Raymond Flash Dryer. This service-proved equipment provides high temperature deodorization and efficient fly ash collection. The dried sludge can then be incinerated to provide heat for further sludge drying, or can be used as a soil conditioner — in parks or recreation areas, or for sale to gardeners.

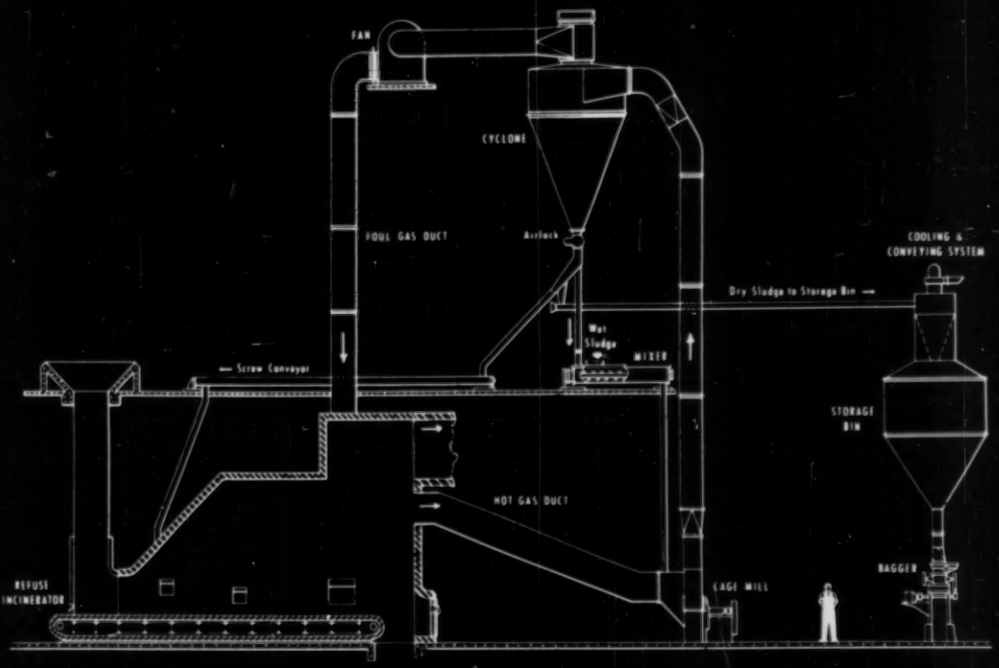


FOR SLUDGE DISPOSAL ALONE, the C-E Raymond Flash Drying and Incinerator System permits both drying and incineration of sewage sludge —separately or together—in any proportion. Where combined sewage and refuse disposal is not feasible, this system provides maximum efficiency in processing filter cake.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS;

# of waste disposal { 1 refuse... 2 sewage sludge

land...labor...fuel...capital investment



C-E 2-in-1 REFUSE AND SEWAGE DISPOSAL SYSTEM

This system combines over 50 years' experience in burning every kind of marginal and waste fuel with a drying system that today processes more filter cake than all other systems combined. The entire operation is automatic, efficient, quick and clean. Capacity per dollar of plant investment is increased. Manpower requirements are minimal. The system is capable of burning all types of combustible refuse in quantities ranging upward from 50 tons per 24-hour day.

COMBUSTION C-E ENGINEERING

General Offices: Windsor, Conn. • New York Offices: 200 Madison Ave., New York 16 C-302

Raymond Division: 427 West Randolph St., Chicago 6, Ill. • Western Office: 615 So. Flower St., Los Angeles 17, Cal.

Canada: Combustion Engineering-Superheater Ltd.

PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE

ONLY ROTO-PAC HAULS AN EXTRA LOAD EVERY DAY WITHOUT EXTRA EQUIPMENT OR EXTRA PAY!

That's what the time saved on any route by ROTO-PAC adds up to, thanks to continuous loading plus continuous compaction.

SEE IT IN ACTION WITHOUT LEAVING YOUR OFFICE . . .

Color movies of the world's finest and fastest rubbish collection unit show the versatility of ROTO-PAC on both typical and unusual routes. Prefer a "live" demonstration? A letter arranges it. No obligation, of course.

P.S. At the same time you'll see the ultimate in container systems—built to handle both manual and automatic loading of containers ranging from 1/2 to 6 yards from dock or street level.

CITY TANK CORPORATION

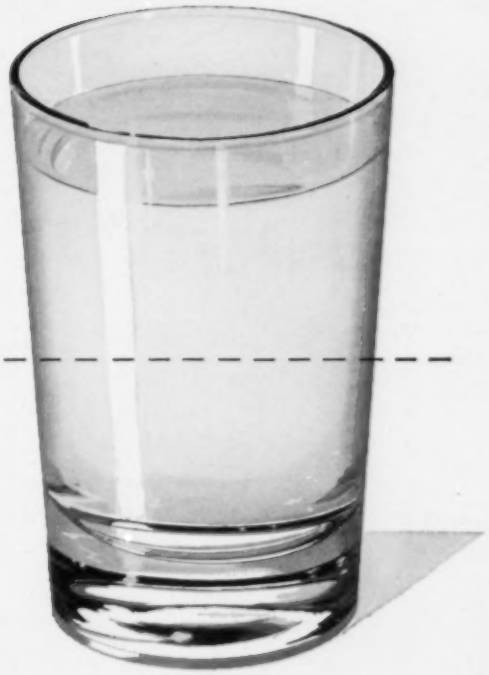
(A Unit of Hagan Industries, Inc.)

Culpeper, Virginia

NOW...

cut new filtration plant costs 45%

Increase clear water capacity 100%



Specify Celite diatomite filtration

You can now double the potable water capacity available to your growing community and cut the installation cost of new filtration nearly in half. How? Specify diatomite filtration. You'll reduce land and construction costs because diatomite systems need only ¼ the housing space of equivalent-capacity sand plants. In fact diatomite systems are so compact, they can sometimes be added to existing plants.

If you're considering water filtration for the first time, it makes good financial sense to go Celite* diatomite all the way. An actual test installation by Johns-Manville has proved that a diatomite filter station can be installed for 45% less than a sand filter station of equal capacity.†

What's more, Celite will usually give better water clarity under comparable conditions. Turbidity is far lower. More suspended solids, including all floc, amoebae and algae, are removed. And a Celite diatomite system is easily operated and maintained by regular municipal water personnel.

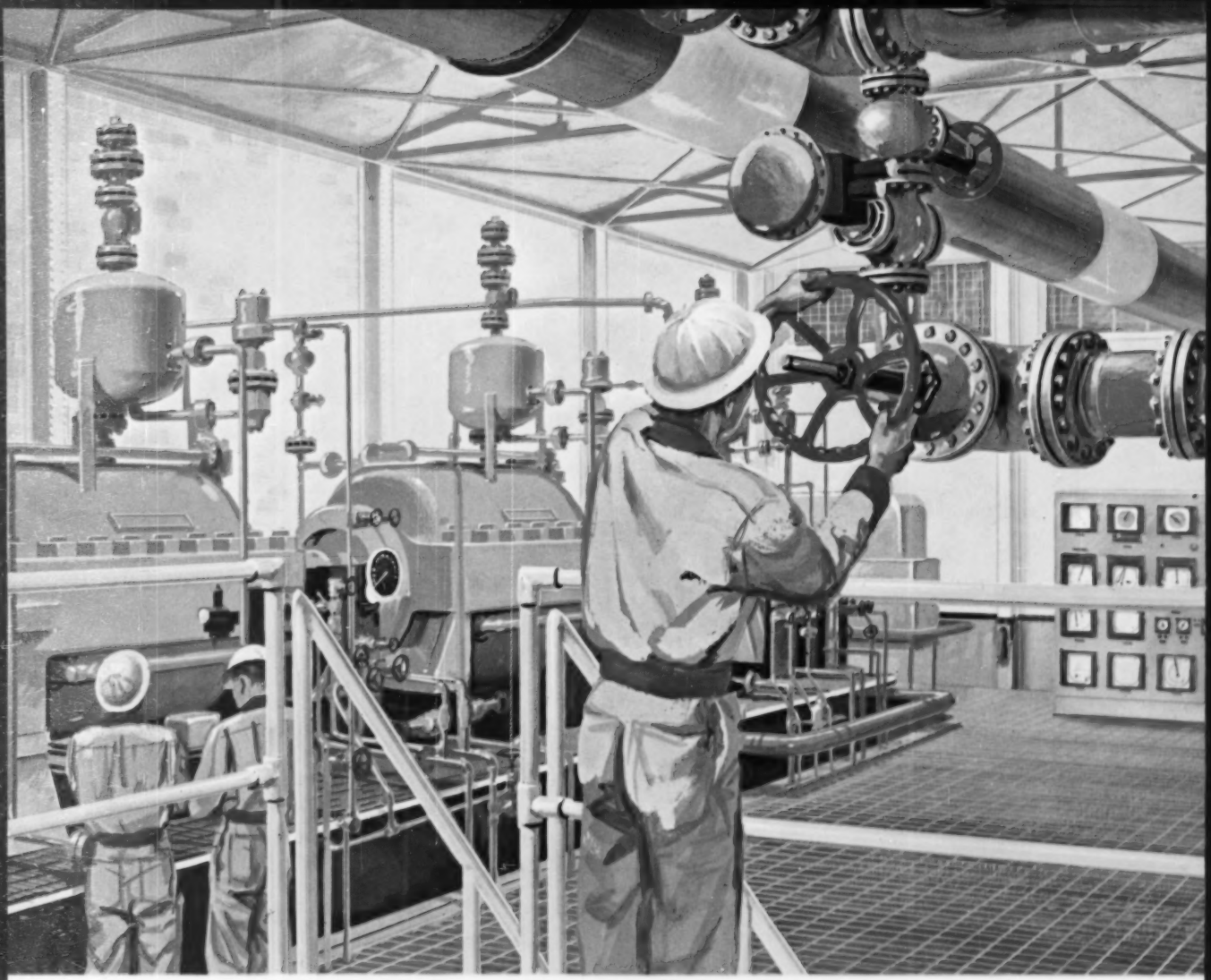
Mined from the world's purest commercially available deposit, Celite is carefully processed for complete uniformity. Call your nearby Celite engineer for complete information on Celite's wide range of grades; he will gladly assist with your particular problems. And write today for FREE informative reprint.† Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.

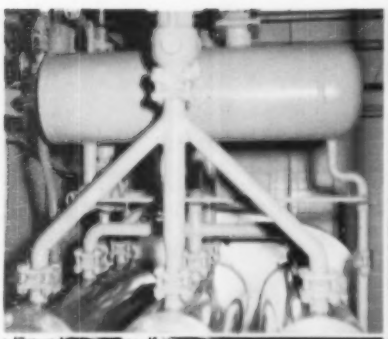
*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

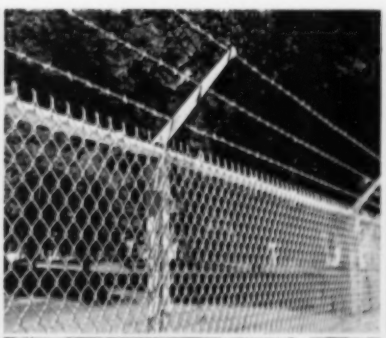
†Comparison Studies of Diatomite and Sand Filtration by G. R. Bell, Journal American Water Works Association, September, 1956.

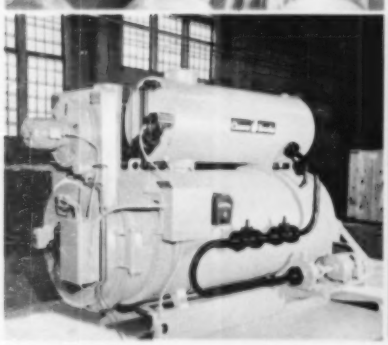
JOHNS-MANVILLE

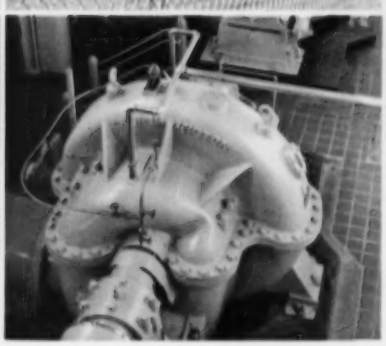
JOHNS-MANVILLE PRODUCTS

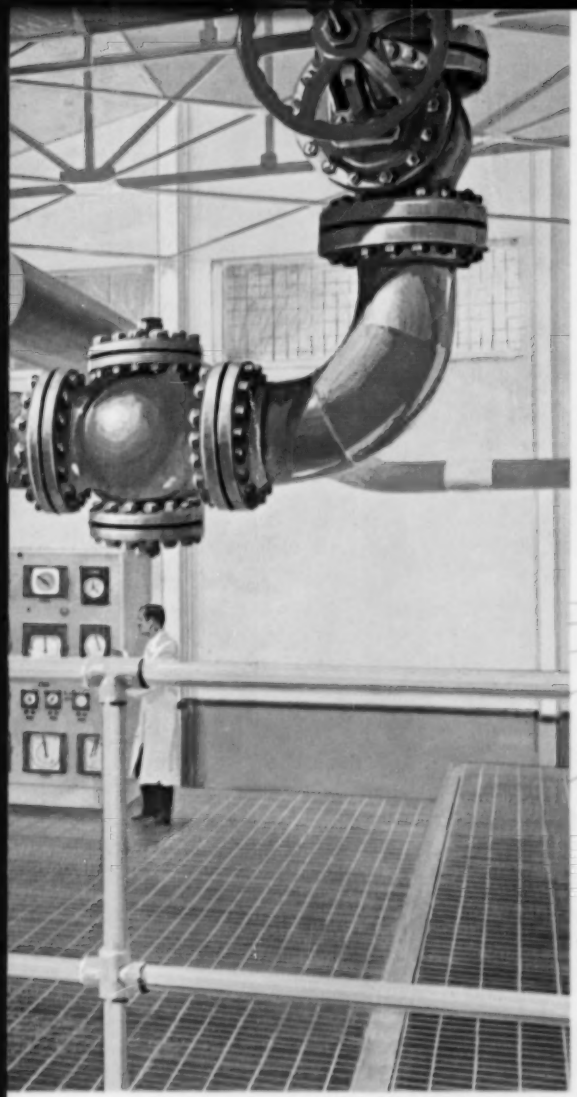












Rust-Oleum

NEW COLOR HORIZONS

System

HERE is a modern, functional *system* that combines four important points. (1) the ability to stop rust, (2) modern color harmony, (3) durability to last and last, (4) ease of application. From machinery, equipment, and structural steel to tanks, steel fences and metal sash – the Rust-Oleum New Color Horizons System can provide lasting beauty in the colors of your choice. Ask your Rust-Oleum Industrial Distributor, together with your Rust-Oleum Factory Specialist, to make a survey of your plant and provide complete recommendations. Rust-Oleum Industrial Distributors maintain complete stocks for prompt delivery in all principal cities of the United States, Canada, and in many countries around the world.

Rust-Oleum, in its various forms, can also save you time and money on problems like these: Heat Resistance, Water Resistance, Chemical Resistance, Coating Galvanized Metal, Speedy-Dry Coatings (less than thirty minutes to dry).

PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY-FIVE YEARS

RUST-OLEUM®

See our catalog in Sweet's.

STOP RUST by applying Rust-Oleum 769 Damp-Proof Red Primer directly over the sound rusted surface

Save time, money, and metal. Brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining sound rusted surface after scraping and wirebrushing to remove rust scale and loose rust. **Specially-processed** fish oil vehicle penetrates rust to bare metal as proved in radioactive tracing studies.

STOPS RUST!®

Distinctive as your own fingerprint. There are imitations, but only one Rust-Oleum.

Insist upon industry-proved Rust-Oleum. Accept no substitute.

You take the brush! Try a free test sample!

ATTACH TO YOUR LETTERHEAD

RUST-OLEUM CORPORATION
2985 Oakton Street • Evanston, Illinois

At no cost or obligation, please send me:

- ☐ New full-color catalog on New Color Horizons System and specialized Rust-Oleum systems, including color charts and applications.
- ☐ FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer.
- ☐ Please have your representative contact us to discuss a plant survey.

Does your fair city smell only fair?

Shocking question? Perhaps! Yet it is one that deserves the attention of every municipal official concerned with noxious and offensive organic fumes and odors originating from industrial installations in his community.

Health-harmful fumes and offending odors *can* be eliminated efficiently and economically by Catalytic Combustion systems.

Many progressive, community-minded industries in hundreds of cities have installed Catalytic Combustion equipment . . . and they have quickly and effectively stopped the discharge of noxious fumes to the atmosphere. Others can accomplish the same results, and at costs entirely within reason.

If your city is concerned with the serious and growing problem of industrial air pollution, a request will bring our new descriptive brochure. It describes what industry in your area can do about air pollution. Write "Municipal Engineer, Department C."

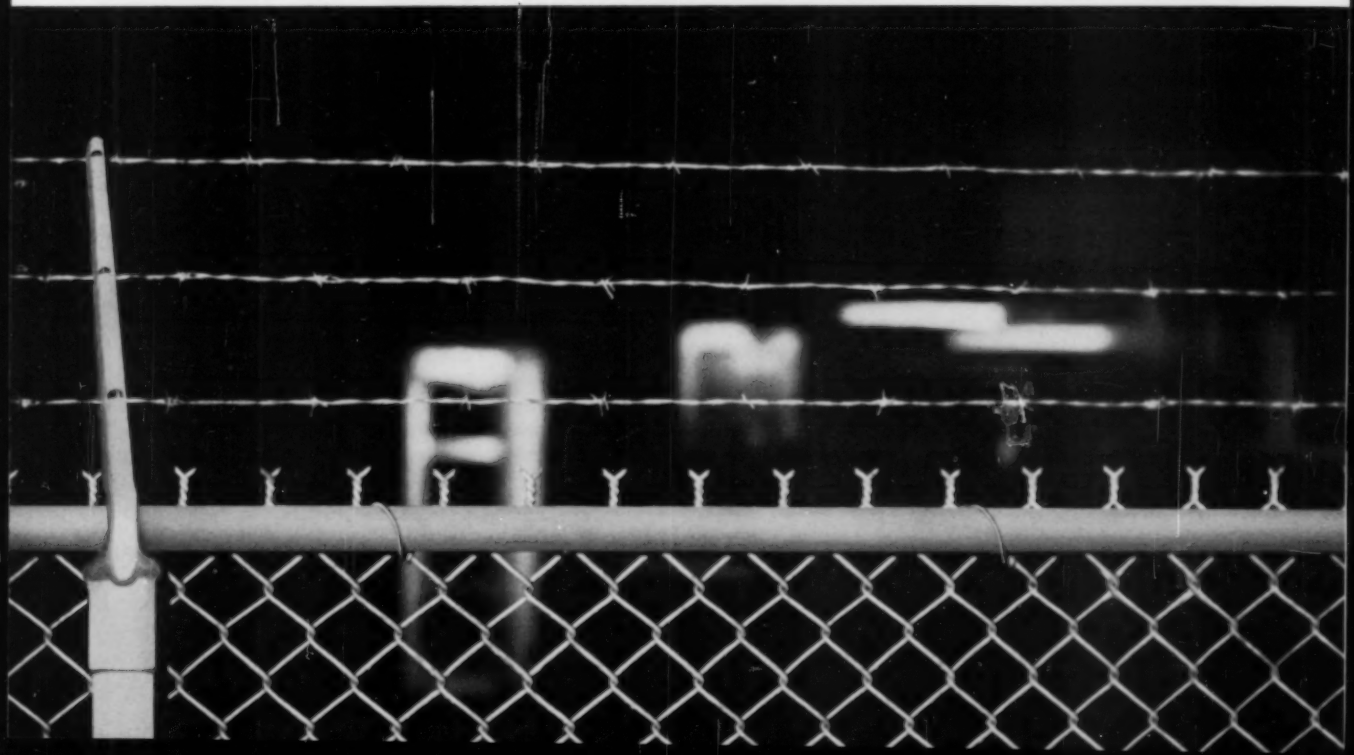
CATALYTIC COMBUSTION CORPORATION

4725 Fourteenth Street • Detroit 8, Michigan

A SUBSIDIARY OF UNIVERSAL OIL PRODUCTS COMPANY

the inside story on fence and property protection... save your city money and trouble by reading this advertisement or passing it along to the man who buys fence

TURN THE PAGE ➡



continued from preceding page

It may take 10 years to find out if you bought a good fence. Buying chain link fence is a lot like buying carpeting: it takes years of wear and tear—usually about 10—before you know if you've made a good buy. At the time of purchase, only an expertly informed buyer can tell. The following discussion of fence is intended to give you pertinent information and a supply of pointed questions to ask a supplier the next time you have to buy property protection fence.

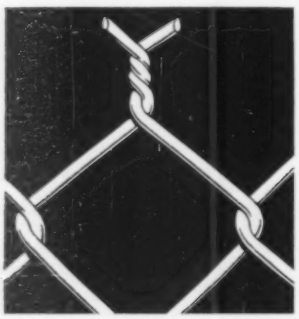


FIG. 1: Galv-After process, developed by Cyclone, assures uniform zinc coating over Cyclone Fence fabric. No uncoated ends or bends to invite corrosion.

fence uniformly galvanized?

Some chain link fence is galvanized **before** weaving. Twisting, turning and bending by weaving machines may break the seal of zinc; leave uncoated ends to invite corrosion.

USS Cyclone Fence is galvanized after weaving. This Galv-After process, developed by Cyclone, means that none of the protective zinc is removed from Cyclone chain link after it leaves our hot-dip tanks. This adds years to fence life.

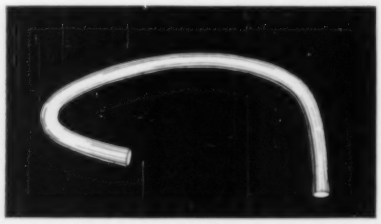


FIG. 2: Prefabricated clip — unique with Cyclone — makes a cleaner, tighter job, gets the fence up faster.

every part engineered to its job?

Fence can cost a sizable sum of money. You have a right to expect your investment to pay off in 20, 30 or more years of solid property protection with relatively little maintenance. This means you want a fence that's engineered to the job, not just a haphazard collection of pieces and parts.

Every part that goes into a USS Cyclone Fence is completely pre-engineered. The design, the weight, the mechanics are exactly right. Take the 4″ piece of wire we use to fasten fence fabric to line posts. It's about the smallest thing that goes into a Cyclone fence, yet we've gone to the trouble of pre-shaping it into a clip. The clip makes a cleaner, tighter job and helps us get your fence up faster. This can save you money.

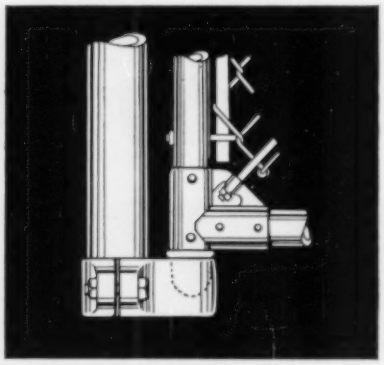


FIG. 3: Sleeve construction of USS Cyclone gate makes repairs easy. Remove a few rivets, insert a new part and you have a new gate.

gates easily repairable?

Most fence gates are welded. Smack one with a truck and you have to burn off the damaged section and weld on a new one. It's a major rebuilding job.

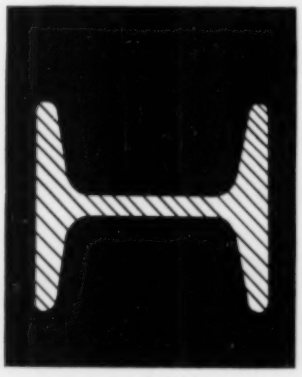
USS Cyclone Gates are made with sleeve construction. Remove a few rivets, insert a new part and you have a new gate. Cyclone gates are prefabricated. There's no cut and fit in the field. Saves us time, saves you money. Cyclone gates have adjustable truss rods. Most welded gates don't. The truss rods help true up a gate and keep it true. We say our gates never sag. They don't.

are the line posts H-Posts?

The job of the line posts: to give you strength where you need it most—across the line of fence. If they're weaklings you may be in for trouble; someday they could be called on to stop the roll of a truck or halt the veer of a car. The stronger they are, the more protection your people and property will have.

The Cyclone H-Post is solid steel covered with a heavy coat of zinc. It's designed like a beam for extra strength. Its flange and web make a better bond with concrete than the round type of line post. There's no inside surface to corrode; all surfaces are exposed and zinc-protected. There's no well to fill with water if a top should loosen; in a freeze the expanding ice can pop a top right off a hollow post. The H-Post won't crimp if something runs into it. It has to be twisted first, then bent to put it down. If it does go down, it can be straightened by applying heat and pulling it upright and it will still be strong and look good. With the H-Post we use on heavy-duty fence, you get almost a half pound more metal per foot than you do with other types of posts. That means more strength at no extra cost.

FIG. 4: H-post—developed by Cyclone—is designed like a beam for extra strength. Flange and web make excellent bond with concrete. No hidden surfaces to corrode.



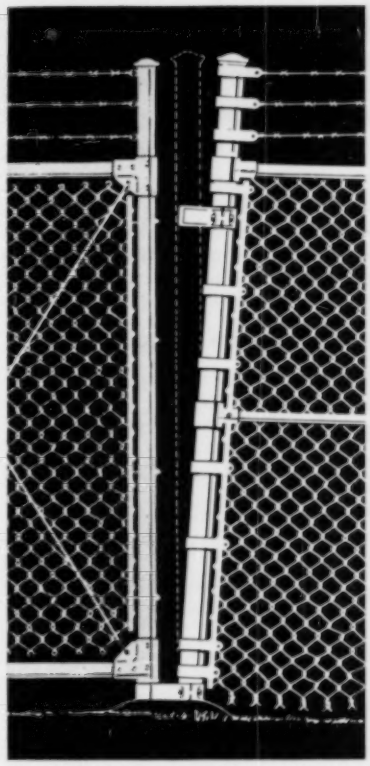


FIG. 5: Expert Cyclone crewmen set gate post a bubble off plumb. Heavy gate pulls post into line, gate swings true.

pickup crews . . . or fence men?

Your fence will look better and last longer if it's put up by men who know fence. Find out what kind of crew will put in your fence **before** you buy.

Most of our USS Cyclone crewmen have been with us for years. They know our specifications so well they can erect a fence from the "take off" on the back of our estimating sheets. There's a knack to putting in good fence. Example: the strongest post will give a little when you hang a heavy gate on it. To compensate for this lean, an expert Cyclone crewman will set the gate post a bubble off plumb. When the gate is hung, its weight will pull the post into line. These are the little tricks of the trade that make the difference between a good job and an average job.

how's the price?

Price alone is not the answer when you're buying fence. You'd be amazed what can be done by opportunists to cheapen the **quality** of a fence along with the price, without your knowing it. You may get lighter gage wire than you specify. Cheaper fittings. Lightweight tubing instead of heavyweight pipe. A cheaper grade of zinc coating. Shorter posts than specified (the company that's willing to do it can save a foot or two of metal by not sinking the posts in concrete to an adequate depth).

Cyclone makes one grade of fence, no cheaper line. Our specifications are standard. USS Cyclone Fence is pre-engineered, prefabricated to the smallest part. We stand behind the quality of all our parts and workmanship. We're a direct organization, the only people in the fence business who have complete control of everything that goes into the fence, from the mining of the ore for the metal to the actual erection of the fence. If something goes wrong, we've got nobody to pass the buck to. That's why we take special pains to see that nothing does go wrong.

recognize the brand?

It's possible to go into the business of selling and erecting fence with little more than a desk, a telephone and the price of an ad. You can get out just as fast as you got in. That's why it's important to know the brand and know you can depend on it before you buy.

Cyclone is the largest manufacturer of chain link fence in the world, and one of the oldest. We've been in business 74 years. A point particularly worth emphasizing: Cyclone is not a type of fence, it's the name of one particular brand of fence. The only company that makes USS Cyclone Fence is the American Steel & Wire Division of United States Steel. And the only people who sell it are the 69 Cyclone Branch Offices around the country.

continued on next page

continued from preceding page

can you count on service?

Cyclone has 69 branch offices around the country. Which means wherever you are, we're reasonably close by. Our service is fast, sure. Our representatives know fence and the intricacies of writing solid fence specifications. They'll be happy to sit down with you anytime and help you develop a set of airtight specifications which, if followed to the letter, will guarantee you a first class fence job.

USS and Cyclone are registered trademarks

GENERAL OFFICE: 614 SUPERIOR AVE., N. W., CLEVELAND 13, OHIO.

69 CYCLONE BRANCH OFFICES

Albany, Georgia
P. O. Box 509
Phone: HEmlock 2-6580

Albany, New York
167 Chester Street
Phone: HE 4-6715

Atlanta, Georgia
4646 Deere Drive
Chamblee, Georgia
Phone: GLendale 7-6336

Batavia, Illinois
P. O. Box 304
Phone: TRemont 9-5510

Beaumont, Texas
4975 Port Arthur Road
Phone: TErminal 5-2501

Birmingham, Alabama
1017 N. 28th Street
Phone: ALpine 2-3327

Bloomington, Illinois
P. O. Box 13
Phone: 824-8705

Boston, Massachusetts
360 Eastern Avenue
Malden 48, Massachusetts
Phone: DAvenport 4-2600

Buffalo, New York
69 Cary Street
Phone: TL 6-7828

Charleston, West Virginia
P. O. Box 162
Phone: DIckens 4-4521

Charlotte, North Carolina
1003 Pecan Avenue
Phone: EDison 3-8696

Chattanooga, Tennessee
4013 Tennessee Avenue
Phone: TAylor 1-2831

Chicago 33, Illinois
13600 So. Brandon Avenue
Phone: MItchell 6-2500
6348 W. Diversey Avenue
Phone: NA 2-3784

Cincinnati 2, Ohio
1500 Fifth-Third Bank Building
Phone: GArfield 1-4460

Cleveland 1, Ohio
1287 Marquette Road
Phone: ENdicott 1-1230

Columbia, South Carolina
P. O. Box 4063, Edgewood Station
Phone: ALpine 2-0423

Columbus, Ohio
101 N. High Street
Phone: CApital 4-2435

Dallas, Texas
1703 Cedar Spring Road
Phone: RIverside 1-5222

Davenport, Iowa
611 Kahl Building
Phone: 3-3931

Detroit 7, Michigan
1925 E. Hancock Avenue
Phone: TEmple 2-2001

Erlton, New Jersey (Camden Area)
302 Marlton Pike
Phone: HAzel 9-7777

Eugene, Oregon
P. O. Box 1171
Phone: DIamond 3-7113

Flint, Michigan
Box 623
Phone: CEdar 5-6608

Fort Worth 1, Texas
1316 East Lancaster
Phone: EDison 5-4371

Fresno, California
P. O. Box 1803
Phone: BAldwin 2-2021

Green Bay, Wisconsin
P. O. Box 64
Phone: HEmlock 7-4752

Greensboro, North Carolina
P. O. Box 9303
Phone: BRoadway 5-6641

Harrisburg, Pennsylvania
112 N. Second Street
Phone: CEdar 4-4120

Hartford, Connecticut
½ Wawarme Avenue
Phone: CHapel 9-6835

Houston 5, Texas
6513 S. Main Street
P. O. Box 20084
Phone: JAckson 3-1613

Indianapolis 5, Indiana
P. O. Box 55113
Phone: CLifford 1-0087

Jackson 115, Mississippi
117 Woodrow Wilson Avenue
Phone: FL 3-6881

Kansas City, Kansas
2820 Roe Lane
Phone: KEndall 2-2472

Lansing, Michigan
501 N. Walnut Street
Lansing, Michigan
Phone: IVanhoe 2-0624

Los Angeles, California
820 Thompson Avenue
Glendale 5, California
Phone: CHapman 5-2635

Louisville, Kentucky
P. O. Box 33
Phone: JUniper 3-0408

Lubbock, Texas
2408 Clovis Road
P. O. Box 1567
Phone: POrter 2-0836

Memphis, Tennessee
3610 Park Avenue
(Mail Address: P. O. Box 6421)
Phone: FAirfax 4-5422

Miami, Florida
2925 N. W. 42nd Avenue
P. O. Box 55-7486
Phone: NEwton 5-4585

Milwaukee 2, Wisconsin
N 57—13394 W. Reichart Ave.
(Butler)
Phone: SUnset 1-7381

Minneapolis, Minnesota
4450 Lyndale Avenue, North
Phone: JAckson 1-3501

Newark 5, New Jersey
796 Frelinghuysen Avenue
Phone: BIgelow 8-2600

New Orleans 23, Louisiana
6000 Jefferson Highway
P. O. Box 23119
Phone: VErnon 3-8251

New York City 17, New York
71 Broadway—Room 708
Phone: DIgby 4-9000, Ext. 709

Norfolk, Virginia
6413 LaRue Circle
Phone: MAdison 2-4296

Oakland 8, California
954 60th Street
Phone: OLympic 2-2060

Omaha, Nebraska
117 S. 17th Street
(Mail Address: P. O. Box 542)
Phone: 342-7315

Philadelphia, Pennsylvania
Eagle and Hillcrest Road
Havertown, Dela. Co., Pa.
Phone: GRanite 2-7454

Phoenix, Arizona
2532 South Fifteenth Avenue
Phone: ALpine 2-3025

Pittsburgh 36, Pennsylvania
77 Terence Drive
Phone: TUxedo 4-3303

Portland 10, Oregon
2345 N. W. Nicolai Street
Phone: CApitol 6-7305

Providence 3, Rhode Island
P. O. Box 434
Phone: JAckson 1-6884

Riverside, California
3485 Orange Street
Phone: OVerland 3-4717

Sacramento, California
P. O. Box 267
Phone: GIlbert 2-7261

St. Louis 17, Missouri
6780 Southwest Avenue
Phone: MIssion 5-8017

Salt Lake City, Utah
3206 So. Main Street
Phone: HUnter 4-6321

San Antonio, Texas
2015 West Avenue
Phone: PErshing 4-5141

San Diego 1, California
2144 El Cajon Boulevard
Phone: CYpress 8-8243

San Jose, California
460 Park Avenue
Phone: CYpress 5-3310

Syracuse, New York
3001 James Street
Phone: HOward 3-0417

Seattle 2, Washington
2021 Minor Avenue, North
Phone: EAst 3-0911

Shreveport, Louisiana
4506 Mansfield Road
P. O. Box 8158 Morningside
Station
Phone: ME 1-3601

South Bend, Indiana
102 Lafayette Building
Phone: CEntral 4-5179

Spokane, Washington
P. O. Box 95 Opportunity Station
Phone: MAdison 4-0421

Tacoma, Washington
911½ Pacific Avenue
Phone: MArket 7-4551

Tulsa 4, Oklahoma
3633 Charles Page Boulevard
Phone: LUther 2-2227

Washington, D. C.
565 Jefferson Davis Highway
Arlington, Virginia
Phone: OTis 4-7992

Waukegan, Illinois
P. O. Box 260
Foss Park Ave., North Chicago
Phone: DExter 6-1180

White Plains, New York
2 Grand Street
Phone: WHite Plains 9-8409

Steel For safety, dependability, economy.

USS **American Steel & Wire Division of United States Steel**

Better Methods and Lowered City Costs

. . . are possible through the use of equipment outlined on this page.

Write to address given or circle corresponding number on free post card on page 61.

Everything for the Swimming Pool

857 *Catalog* No. 516 (A.I.A. File No. 35-F-2), which contains a pool maintenance section, is the most comprehensive catalog ever published by PARAGON SWIMMING POOL CO., INC., 12 PAULDING ST., PLEASANTVILLE, N. Y., manufacturers of swimming pool equipment, supplies, chemicals.

Concrete Vibrators

858 These one-man operated high-cycle units place 30 to 40 cubic yards of 2-inch slump concrete per hour. They can be positioned within 400 feet of the vibrating operation. HOMELITE, a division of TEXTRON, INC., 106 RIVERDALE AVE., PORT CHESTER, N. Y., reports that they'll cut vibrating costs in half.

Sanitary Refuse Pick-up System

859 This speedy, mechanized system of refuse handling is designed to reduce manpower and increase efficiency. It employs a highly mobile refuse collection unit called TrashTainer, made in 1 and 2-yard capacities. Write MARION METAL PRODUCTS CO., MARION, OHIO.

Ball Valves

860 Fact-filled bulletin on these List 26 ball valves points out their suitability for automatic pump stop and check service, pressure regulating, and strategically located shut-off applications. For copy, write WILLAMETTE IRON AND STEEL CO., VALVE DIVISION, 2800 N. W. FRONT AVE., PORTLAND 10, ORE.

New Diesel Tractor

861 Latest addition to the Fordson diesel tractor line is the new Super Major, which includes many new features that add to both operator comfort and economy of operation. For descriptive literature, write TRACTOR AND IMPLEMENT DIV., FORD MOTOR CO., BIRMINGHAM, MICH.

Plastic Pipe for Municipal Use

862 For information on NSF-approved ABS and polyethylene plastic pipe for cold water supply lines, sprinkler and lawn irrigation, house-to-main service lines, natural gas lines, jet wells, submersible pumps, and process piping, write JOHNS-MANVILLE, BOX 14, AC-6, NEW YORK 16, N. Y.

Cuts Grass at a Clip

863 By writing to WOOD BROTHERS MFG. CO., 54106 S. 4TH ST., OREGON, ILL., you can obtain full details on the Cadet E60 and EM60, economy model rotary mowers designed for high-speed mowing and light brush clearing.

Combination Drying Unit

864 . . . and direct-reading precision balance accurately measures moisture content of a variety of liquids and solids, including sewage sludge and sealing compounds, provides simple way to determine vacuum filter efficiency. For *Bulletin* 6-C, write OHAUS SCALE CORP., 1050 COMMERCE AVE., UNION, N. J.

Elevated Steel Storage Tanks

865 This is the title of *Brochure* A-30. It supplies information on elevated steel storage tanks that assure efficient water storage in capacities that range from 200,000 to 3,000,000 gallons. For copy, write CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

If You've a Water Treatment Problem

866 . . . that concerns water conditioning, ion exchange or waste treatment and would like the help of a specialist in the science of fluid processes, write PFAUDLER PERMUTIT INC., PERMUTIT DIV., DEPT. MI-61, 50 W. 44TH ST., NEW YORK 36, N. Y. They'll deal with problems from analysis through test run.

Venturi Tubes and Flumes

867 Literature available from SIMPLEX VALVE AND METER CO., DEPT. MI-41, 7 E. ORANGE ST., LANCASTER, PA., describes a standard venturi tube for accurate measurement of hot or cold water, gases, sewage and sludge and an elliptical venturi tube for measurement of low velocity sewage and sludge. *Bulletin* 802 describes a glass fiber parshall flume for measurement of flow in open channels.

Whips Sewer Stoppages

868 Using its new '61 SeweRodeR, River Hills, Wis., has tripled cleaning capacity for preventive maintenance and clears stoppages within its 20 miles of sewer main within 30 minutes. For facts and features on the SeweRodeR, write FLEXIBLE, INC., 415 ZANGS BLVD., DALLAS, TEX.

Water Meter Bulletin 58

869 . . . supplies complete details on American water meters, shows how these precise measuring units enable you to meet specific needs as determined by your community's water characteristics. Write BUFFALO METER CO., INC., DEPT. AC, 2917 MAIN ST., BUFFALO 14, N. Y.

Traveling Grate Incinerator Stokers

870 These stokers can be custom engineered to meet any needed capacity and they burn all types of combustible refuse. Specifications, construction details, and design features are given in a 6-page illustrated folder. Write LACLEDE STOKER CO., 4440 HUNT AVE., ST. LOUIS 10, MO.

Fire Fighting with High Pressure Fog

871 Twenty-four questions about the effectiveness of fighting fires with high pressure fog are answered in the pocket-sized booklet "Controlling Industrial Fires," published by JOHN BEAN DIVISION, INDUSTRIAL SALES DEPT., FOOD MACHINERY & CHEMICAL CORP., LANSING 4, MICH.

Turns in Superior Sweeping Performance

872 In its newest brochure, ROADMASTER BRUSH CORP., 2331 MORRIS AVE., UNION, N. J., discusses Uni-Sweep street sweeping brushes, whose radially convoluted design eliminates spacers and winding, reduces core weight and speeds assembly. Available with either steel wire or polypropylene filament.

Fluorescent Floodlighting of Tennis Courts

873 *Bulletin* OLP-1021 provides lighting layout recommendations for tennis courts, including court dimensions and placement of fixtures and poles, with calculated foot-candle level. Wire size recommendations and wiring diagram included. Write GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

Diesel Goes to Full Power In Just 15 Seconds

874 These F-M opposed-piston generating units provide full power from a cold start. They produce up to 2500 kw per unit and can be linked in multiple units for peaking, standby duty, or dead load pickup. For details and specifications, write MR. S. K. HOWARD, DIESEL DIVISION, FAIRBANKS, MORSE & CO., BELOIT, WIS.

Bottom-Fired Melting Kettles

875 These units are designed to quickly and smoothly melt and heat asphalt, tar, pitch, bituminous paint or enamel and jointing compounds. They burn kerosene or L-P gas and are available in 55-165 gallon capacities. Data Sheet No. GB121FA, Index Area UC-2 gives full facts; write HAUCK MFG. CO., 124-136 TENTH ST., BROOKLYN 15, N. Y.

Swing Check Valves

876 These valves prevent backflow. They may be installed in horizontal or vertical position with upward flow and provide a leak-proof seal. For complete details, write KENNEDY VALVE MFG. CO., ELMIRA, N. Y. Also ask for the company's A.W.W.A. Maintenance Manual.

High-Pressure Cleaner

877 Jenny-Multi-Job Washer is a new self-contained, electrically-powered and electrically-heated unit that degreases, cleans, washes and rinses engines, parts, machinery, equipment, trucks, car bodies. For literature, write HOMESTEAD VALVE MFG. CO., HYPRESSURE JENNY DIV., CORAOPOLIS, PA.

New Aquatic Weed Herbicide

878 AGRICULTURAL CHEMICALS DIV., PENNSALT CHEMICALS CORP., 2901 TAYLOR WAY, TACOMA, WASH., has developed a contact action herbicide for use against a great range of water weed infestation and in recreational waterfront areas, lake margins, park ponds. Aquathol is not harmful to fish when used in recommended dosages.

Record-Handling Problems?

879 Why not let RECORDAK CORP., 415 MADISON AVE., NEW YORK 17, N. Y., apprise you of the new concepts in handling everything from office records to computer tapes. Request booklets on Reliant 500 Microfilmer; Dacom System; Lodestar Reader; Precision Engineering Drawing System.

Easy-Reference Outdoor Lighting Catalog

880 Revere's 136-page outdoor lighting catalog lists hundreds of outdoor lighting products, applications and specifications. For a copy of this comprehensive reference, write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Catches the Eye

881 A new "Oraflame" signal flag just made available to street and highway crews by PRISMO SAFETY CORP., HUNTINGDON, PA., is made of tough, plasticized fabric. These Day-Glo flags offer maximum visibility, and can be attached to equipment or placed on sticks or poles for use as warning signal flags.

(See page 89 for more Bulletins)

"Palletizing saved us $101.00 per carload of pipe unloaded. All pipe received in excellent condition."

MAYOR ROBERT L. HIPPS
LOVELAND, COLORADO

"This report was received from Dr. Robert G. Lanning, Chairman of the Water Committee, and Mr. Will Osborne, Superintendent," said Mayor Hipps.

The savings *you* achieve because of palletizing of *Griffin-20*® may be more or less than the $101.00 per carload mentioned above . . . depending upon which unloading method you have previously used.

Palletized *Griffin-20* pipe can be unloaded in double tiers in approximate 7-ton lots with a fork lift or with a crane; or in single tier 3½-ton palletized lots, if you prefer. *Griffin-20* palletized pipe can also be skidded directly to a trailer or to the ground, without using any lift equipment.

Rest assured, *your* savings will be *substantial*. Remember that with modern 20-foot pipe lengths you will be handling and assembling 10 percent fewer joints. Griffin offers these advantages to *all* customers on *all* shipments.

GRIFFIN PIPE DIVISION
GRIFFIN WHEEL COMPANY
A Subsidiary of American Steel Foundries
Council Bluffs, Iowa

GRIFFIN PIPE DIVISION
COUNCIL BLUFFS

SALES OFFICES

CHICAGO AREA	POrter 6-0452, 850 E. Green St. Bensenville, Illinois	Marvin E. Simpson District Manager Alex E. Kessler (E. Troy, Wis.) Sales Representative
COUNCIL BLUFFS	322-6641, 2601 Ninth Ave.	John L. Larson Sales Representative
DENVER	West 5-2427, 1400 W. Evans Avenue	John M. Masterson District Manager
KANSAS CITY, KANSAS	DRexel 1-5690, 1134 S. 12th St.	Thomas M. McGinley Sales Representative
ST. PAUL	Prospect 6-1521, 941 Johnson Pkwy	William R. Colton District Manager Willard F. Klimmek Sales Representative

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 61.

Turbine Water Meter

882 Bulletin M-975-B43A details the Worthington-Gamon Model III, a current or velocity type meter that handles large volumes of water at minimum pressure loss. Sizes available—2, 3, 4, 6, and 8 inches. Write GAMON METER, division of WORTHINGTON CORP., 296 SOUTH ST., NEWARK 5, N. J.

Fast-Drying Traffic Paints

883 Comparative data, collected during four years of road testing, point out that traffic paints based on Parlon chlorinated rubber dry faster than any others and wear as long. Write HERCULES POWDER CO., HERCULES TOWER,, 910 MARKET ST., WILMINGTON 99, DEL.

Asbestos Cement Sewer Pipe

884 A 4-page brochure supplies pertinent data on Durmanit asbestos-cement sewer pipe with the REKA coupling. Characteristics, flow capacity, installation details, sizes, etc. included. Write AMERICAN MANNEX CORP., 680 FIFTH AVE., NEW YORK 19, N. Y.

Water Works Brass Goods

885 Representative items in this dependable line of water works brass goods include copper service pipe couplings, curb stops, corporation stops, meter stops and couplings and extension service boxes. For details, write A. Y. McDONALD MFG. CO., 12TH & PINE STS., DUBUQUE, IA.

Erases Traffic Lines

886 This self-propelled machine shaves traffic lines at the rate of 4-10 feet per minute at a cost of 1-4 cents per foot. Cutting head cleans path up to 8 inches wide. Write G. H. TENNANT CO., 751G N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

All-Purpose Filtering Medium

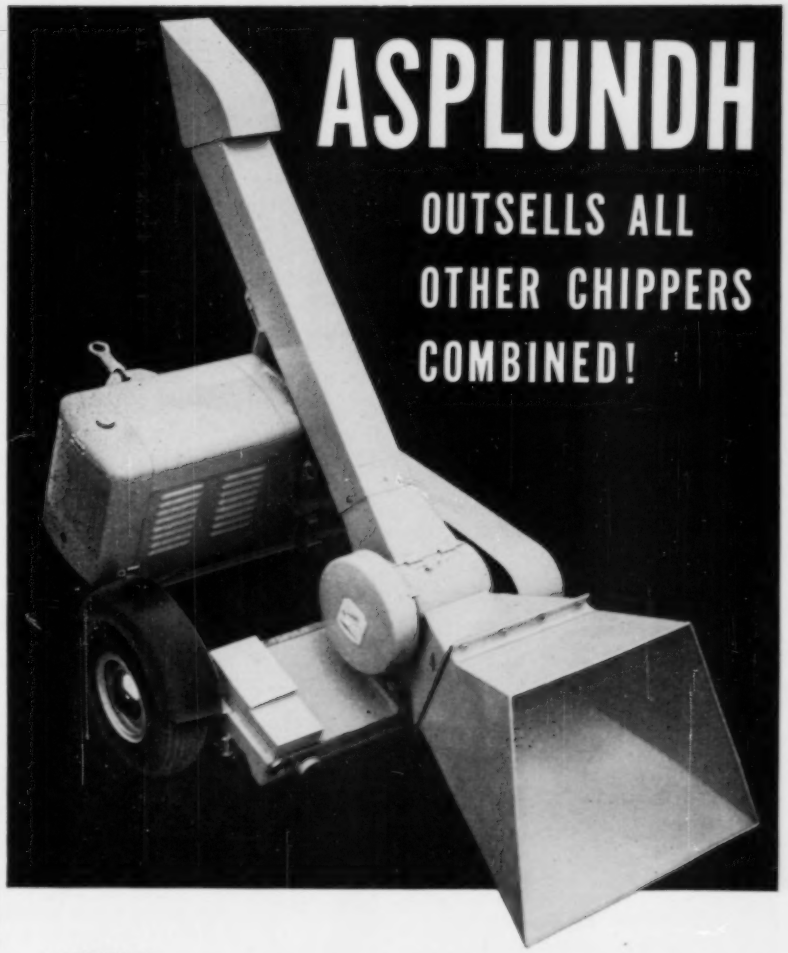
887 Used as a mechanical aggregate in place of sand and gravel, Anthrafilt creates greater efficiency for filters of all types, giving longer runs, higher rates, lower wash-water consumption. Write PALMER FILTER EQUIPMENT CO., 820 E. 8TH ST., ERIE, PA.

Revised Valve Bulletin

888 Specifications and dimensions are given in *Bulletin* V-203 Rev. 1 for all sizes of semi-steel straightway, steam-jacketed, multiport and special order Rockwell-Nordstrom valves and accessories. Write ROCKWELL MFG. CO., NORDSTROM VALVE DIV., 390 N. LEXINGTON AVE., PITTSBURGH 8, PA.

Wedge-Lock Clay Pipe

889 This pipe is reported to give triple protection against infiltration exfiltration and roots, reduce loads in sewerage and in plant pumping. Its wide acceptance is confirmed in a just-off-the-press brochure describing Wedge-Lock installations. For a copy write to any of the following manufacturers: CANNELTON SEWER PIPE CO., CANNELTON, IND.; THE CLAY CITY PIPE CO., UHRICHSVILLE, IND.; GRAFF-KITTANNING CLAY PRODUCTS, WORTHINGTON, PA.; LARSON CLAY PIPE CO., DETROIT, MICH.; LEHIGH SEWER PIPE & TILE CO., FORT DODGE, IA.; THE LOGAN CLAY PRODUCTS CO., LOGAN, OHIO; THE OWENSBORO SEWER PIPE CO., OWENSBORO, KY.; POMONA TERRA-COTTA CO., GREENSBORO, N. C.; THE ROBINSON CLAY PRODUCT CO., AKRON, OHIO; SUPERIOR CLAY CORP., UHRICHSVILLE, OHIO.



WHY? . . . because only ASPLUNDH gives you . . .

Fastest Chipping Action
—by actual test, it's the fastest chipper made.

Minimum Maintenance
—simpler design and fewer moving parts than any other chipper. Means less down time.

Absolute Safety
—blades are tapered and wedged.

Bulk Feeding Area
—permits larger bulk and larger limbs . . . up to 6″ diameter.

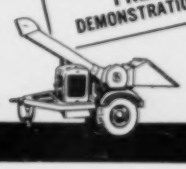
Quick Blade Change
—easy access and simplicity of service.

Telescoping Draw Bar
—couples quickly and easily to various towing vehicles.

Easy Towing
—lower center of gravity, perfect tracking.

Your ASPLUNDH dealer will welcome a side-by-side performance test. Compare—point by point—and you'll see why buyers prefer ASPLUNDH CHIPPERS 4 to 1.

Write today for complete information. Ask for prompt, FREE DEMONSTRATION.



ASPLUNDH CHIPPER COMPANY
Hamilton St., Chalfont, Pa.
By Actual Test the Fastest Chipper Made

ANOTHER HOLAN FIRST

NEW LD-40 ELBOW

WITH HIGH DIELECTRIC STRENGTH, OFFSET YOKE *

One-step entry into the bucket at the rear of the truck is possible because of the offset yoke*.

*Patents applied for.

You save time right from the word "go" with the new Holan LD-40 Elbow. One step and you're in the easy-entry bucket. And one man controls every movement of the Elbow.

Ideal for re-fusing transformers, mid-span trouble work, installing customer service, insulator inspection, street light maintenance, telephone drop installations from mid-span — even maintenance of railroad catenary systems.

The exclusive offset yoke* not only facilitates bucket entry — *it increases versatility and working range.* Angle of the yoke — coupled with 90° lower arm, 135° upper arm travel — permits work over parked cars, over and between power and telephone lines, and on the property side of the pole. It reaches up 40′, rotates 360° continuously in either direction.

It's safe, too. The molded fiberglass reinforced plastic bucket, yoke and upper arm can withstand a bucket-to-ground dielectric test in excess of 100,000 volts (A.C.).

Torsion bars and the reverse offset superstructure design eliminates stabilizing outriggers.

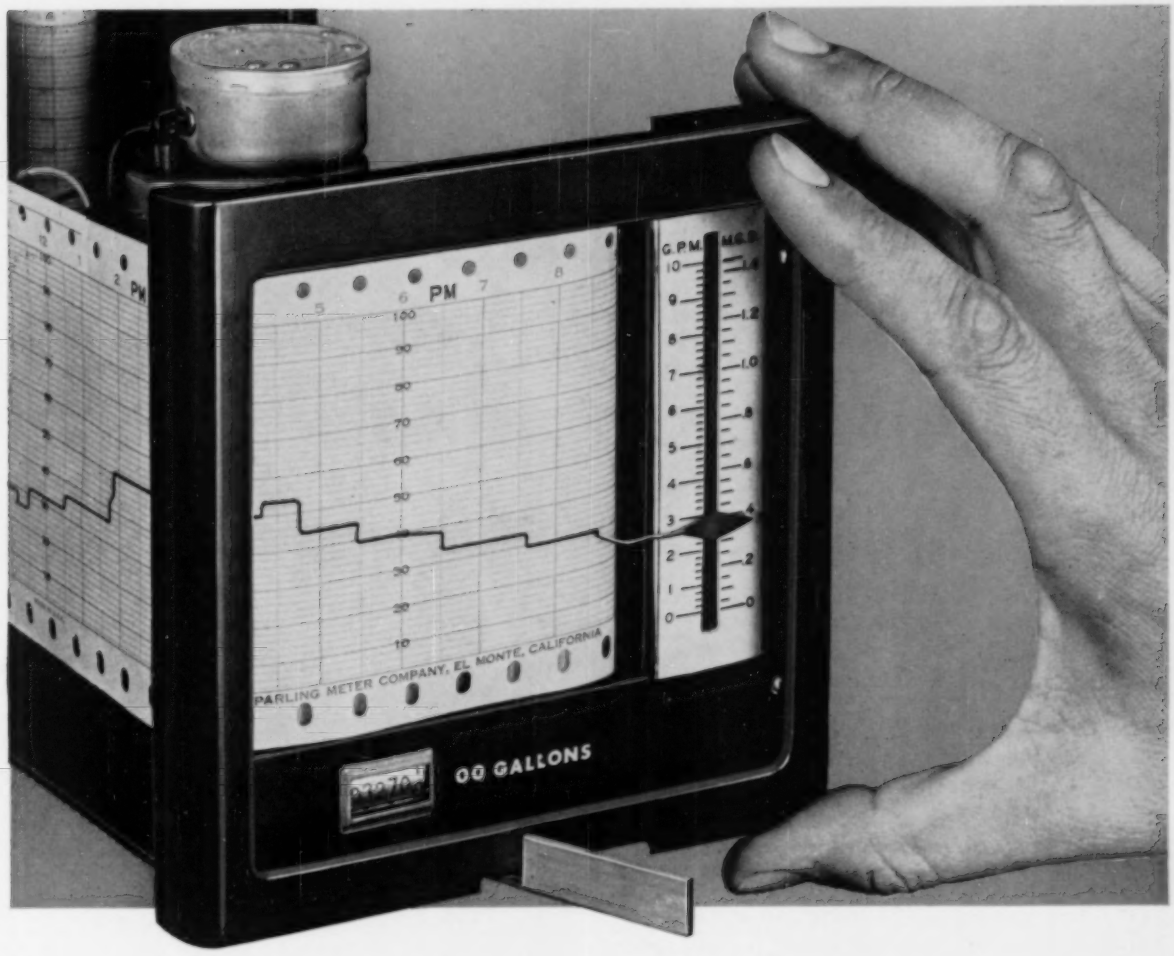
Want more details on this light-duty Elbow? Just call your Holan Field Representative . . . or write us.

HOLAN CORPORATION, 4100 W. 150th, CLEVELAND 35, OHIO

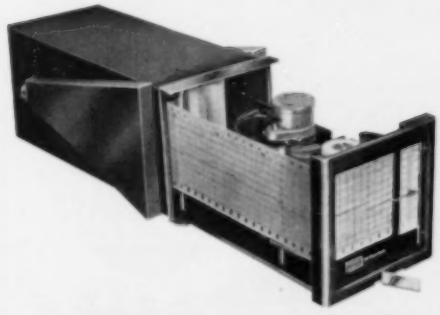
Holan

Subsidiary of THE OHIO BRASS COMPANY

HOLAN



New SPARLING MINIATURE STRIP CHART INDICATOR • TOTALIZER • RECORDER



COMPLETE FLOW INFORMATION IN LESS THAN 1/4 PANEL SPACE

Indication, *totalization* and recording—the same as in full size instrumentation—are all provided in this new, compact unit. Uses standard components, yet requires little more than 6" square panel area. Has 6-digit totalizer, dual equivalent scales, and effective range of 20:1. 60 or 120 day records. When chassis is removed, 26 hours of records are visible without moving chart. Ideal for graphic or conventional panels, and standard electronic racks. WRITE FOR TECHNICAL BULLETIN CF-390.

Sparling equipment includes a complete line of instruments, controls and propeller meters for all main-line requirements.

SPARLING

WATER CONTROL EQUIPMENT

HERSEY-SPARLING
METER COMPANY
Sparling Equipment: **EL MONTE, CALIF.**
225 North Temple City Blvd.

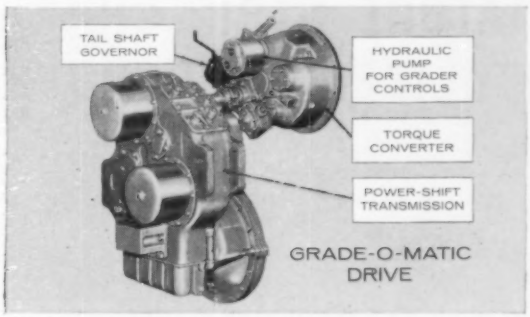
Branches: Atlanta • Chicago • Cleveland • Dallas • Denver • Kansas City, Mo. • Roselle, N. J. • San Francisco • Seattle • United Kingdom Affiliate: TYLORS OF LONDON LTD.

You're miles ahead in performance with GALION GRADERS on the job. They're built to put more WORKPOWER at the blade

HUSKIEST GRADERS BUILT. You get strength to spare from Galion's extra-rugged frame. It's engineered for low-maintenance operation . . . for extra years of cost-cutting performance.

MORE "PUSH-POWER." Full working capacity results from the careful weight-to-horsepower balance built into Galion graders. You get more "push-power" at the blade. That's where power counts most.

EXCLUSIVE GALION DESIGN teams up with heavy-duty engine, rugged transmission, power-booster steering and centralized controls to speed operation. Result is a bigger day's work with less fatigue.



GRADE-O-MATIC DRIVE—THE ULTIMATE in efficient grader operation. It combines torque converter drive, power-shift transmission and tail-shaft governor to provide fully automatic power application.

TORQUE IS MULTIPLIED automatically. Meets varying power needs without constant shifting. Grade-O-Matic operators are free to concentrate on more efficient blade work on every job.

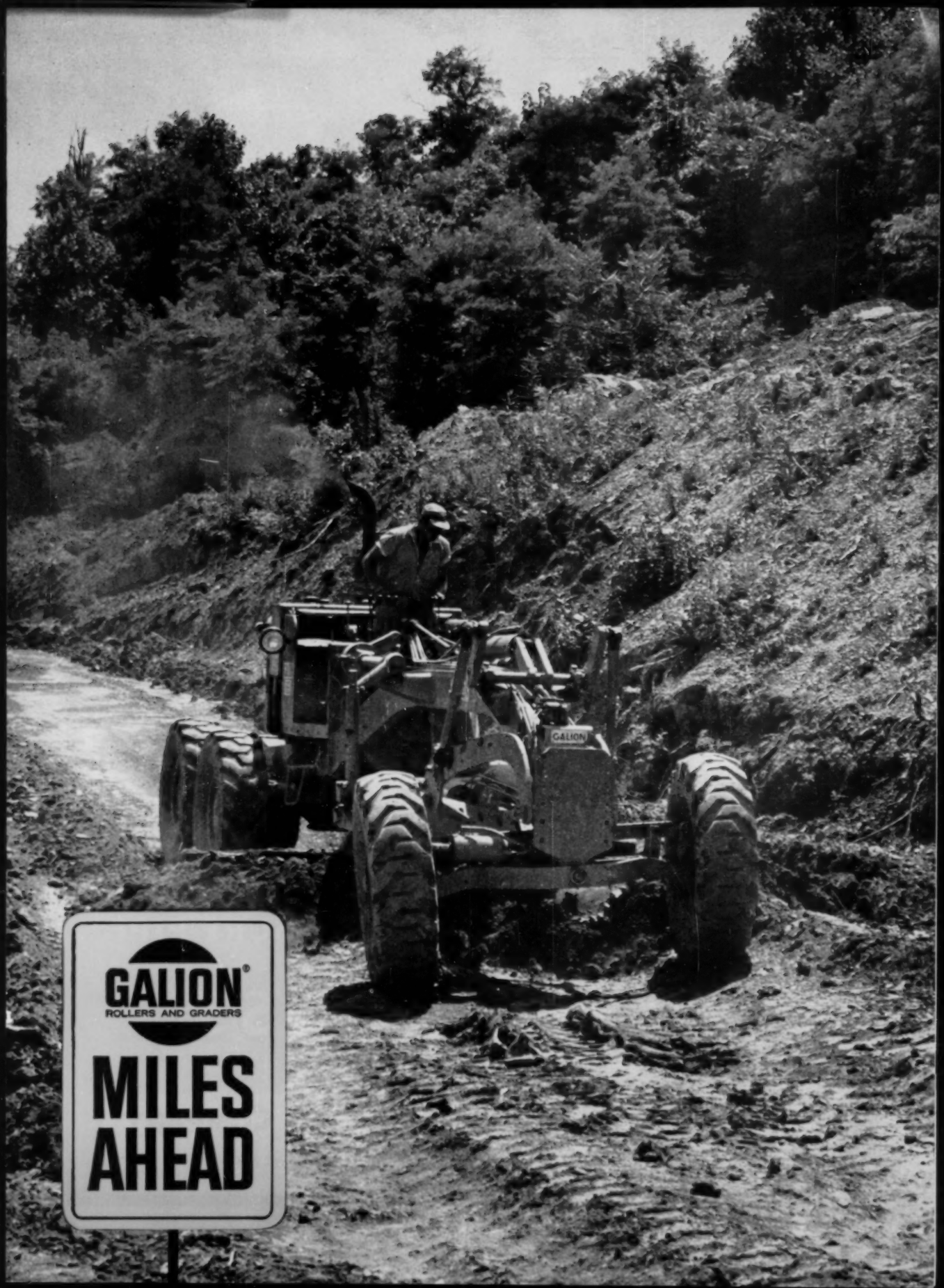
612

For information on graders from 58 to 220 hp., and weighing up to 42,000 lbs., contact your Galion distributor or write for latest catalog data. The Galion Iron Works & Mfg. Company, Galion, Ohio, U.S.A.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.

GALION®
ROLLERS AND GRADERS

General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIONIRON, Galion, Ohio


GALION
ROLLERS AND GRADERS
MILES
AHEAD
GALION

These Comparisons Show Why CAST IRON PRESSURE PIPE is America's No. 1 Tax Saver

POINTS TO COMPARE	CAST IRON PIPE	NON-FERROUS PIPE
Long Life	100 Years or more	?
Bursting Pressure	2,988 psi	746 psi
Bursting Tensile	25,880 psi	3,430 psi
Impact Resistance	234 ft. lbs.	60 ft. lbs.
Beam Loads (12-foot span)	20,790 pounds	3,060 pounds
Crushing Loads	17,900 lbs. per ft.	6,480 lbs. per ft.
Water Absorption	None	9.8% of weight after 24-hour submersion
Tight Joints	Wide selection for liquid or gas service	Limited selection for liquid service
Inside Diameter	6.14"	5.85"

Pipe tested were 6" Class 150.

—and also why CAST IRON PRESSURE PIPE actually COSTS LESS

This advertisement published in the interests of the Cast Iron Pressure Pipe Industry by

WOODWARD IRON COMPANY

Since 1882

WOODWARD, ALABAMA

NOW SHE'S REALLY HAD IT!

Economical malathion-Lethane combination gives 30% better kills than presently-used insecticides ...controls resistant strains, too

60% kill of mosquitoes in area control work is no longer good enough. 90% *plus* is what you can expect with a malathion-Lethane combination. The cost? Comparable to presently-used but *far less effective insecticides.*

Controls larvae and adults

Malathion plus Lethane gives spectacular results on both life stages. While recommended rates are generally higher, 1/10 lb. per acre has given excellent control of adult mosquitoes in Florida. Hundreds of thousands of acres are being treated yearly for larvae in California at 1/2 lb. per acre with similar results.

Controls resistant strains

While malathion is replacing less effective insecticides in all areas, it is particularly useful in the many areas where mosquitoes have become resistant to chlorinated insecticides. Here, authorities have switched almost exclusively to malathion because it is *the* phosphate with low toxicity to warm-blooded animals. The U.S. Public Health Service reports that malathion is actually less toxic than DDT. Vector control authorities, park and city managements are specifying malathion for its combination of mosquito-killing power and safety in use. It can be applied by air, thermal fogging and mist spraying with equally good results.

Formulations widely available

Malathion formulations are supplied to area control authorities by many well-known manufacturers under their own brand names. *Write to American Cyanamid Company,* maker of technical malathion, for detailed information on area mosquito control. American Cyanamid Company, Agricultural Division, New York 20, New York.

The label instructions on Cyanamid products, and on products containing Cyanamid ingredients, are the result of years of research and have been accepted by Federal and/or State Governments. Always read the labels and carefully follow directions for use.

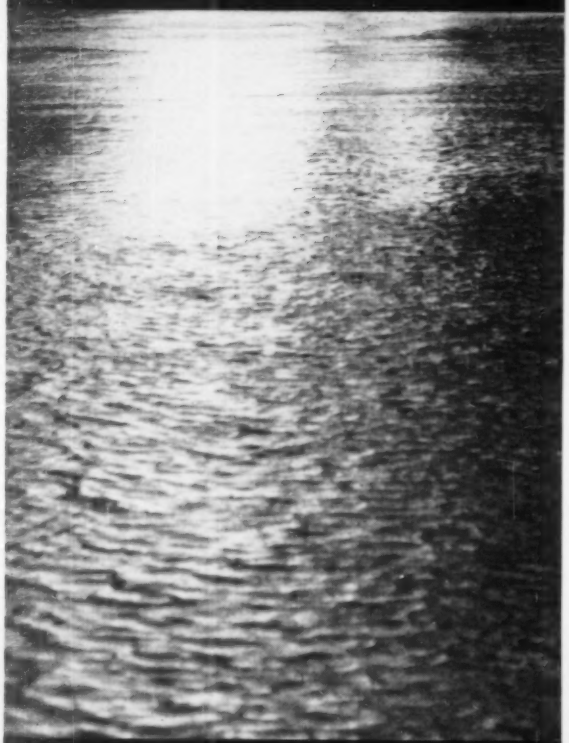
CYANAMID

MALATHION

INSECTICIDES

PURER WATER

Ferri-Floc
FERRIC SULFATE



We can help you with your water purification problems — coagulation, softening, removal of iron and manganese. We have reliable technicians ready to assist you in producing purer water. Let us send you complete information on **Ferri-Floc.**

Also basic producers of—
SODIUM SILICOFLUORIDE
COPPER SULFATE

TENNESSEE CORPORATION
612-629 Grant Building, Atlanta 3, Georgia

LICK Your Traffic Control Problem...FAST and EASY

Only the Dowden Speed Recorder offers these important features . . .

Short 10 ft. measuring field permits fast setup. One officer working alone can be in operation within 5 minutes.

Electronic accuracy of the Dowden Recorder guarantees effective use. Your court will readily accept evidence obtained by use of the Dowden Recorder.

No lengthy pre-use training is required. The simplicity of operation makes an expert of any officer after 1 hour "checkout".

Completely portable, the Dowden Recorder is as convenient to handle as your First Aid Kit. No field adjustment or calibration is necessary.

Select any vehicle in the field, **day or night.** The unique Dowden circuit records from either or both directions without complicated switching or adjusting.

FULL ONE-YEAR GUARANTEE COVERS EVERY DOWDEN RECORDER.

STOP SIGN . . . *automatically stops violator.*

REMOTE CONTROL . . . *pistol grip used in place of panel controls.*

- **Light and buzzer automatically signal violation.**
- **Large 5½" dial . . . definition to ½ M.P.H.**
- **Durable steel road tapes practically invisible to traffic.**

The Dowden Speed Recorder is manufactured and distributed nationally by:

NATIONAL RECORDERS
7646 LYNDALE AVENUE SOUTH
MINNEAPOLIS 23, MINNESOTA

Gain an extra 1½ ft of dumping height by dumping through the bottom of the bucket. Bottom dump feature also enables the operator to control the rate of flow while spreading materials such as gravel, crushed stone or top soil.

Fine-grade with almost motor grader accuracy using scraper action. Exclusive Skid-Shoes on the bottom of the bucket help hold to grade. Your operator can even let go of the controls and still maintain precision accuracy . . . speed up work.

3/4-yard clam action Four-in-One

expands limited equipment budgets!

For just a little more than the price of a conventional ¾-yard tractor loader you can have a "fleet" of equipment! Only the International® Drott T-340 Four-in-One gives you the actions of bucket, bulldozer, scraper, and clamshell, *all* in one machine.

Working alone, one operator with a T-340 Four-in-One can handle a variety of jobs which formerly required a crew with two or three specialized pieces of equipment. Just think of the time and money-saving convenience of such a machine . . . imagine how it would stretch your new equipment and operating budgets. With a Four-in-One, jobs would be completed *right now*, instead of waiting for various pieces of equipment to become available.

You can count on dependable performance, too. T-340 and TD-340 crawlers are IH-tough, with International's traditional built-in stamina. Fuel costs are among the lowest for crawlers in the under 50 hp class.

Find out first hand the many ways the T-340 can expand limited equipment budgets. Ask your nearby IH dealer for a demonstration soon.

International Harvester Co., Chicago 1, Illinois

Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

Back drag with the front half of the bucket to dress banks or clean out ditches. Tractor remains on firm ground. Alternate equipment needed for doing the same jobs would cost far more.

Raise the front half of the bucket all the way and you have an efficient bulldozer. Skid-Shoes hold the blade to grade accurately . . . there's no sudden "suck in" of the blade.

Bulletin

Neptune Reveals 3 Money-Saving Features of Forthcoming New Model 60 Water Meter

Here is a remarkable new meter that makes progress a pleasure – because it protects both your *present and future* meter investment.

The Model 60 has all the advantages of the most modern sealed, magnetically driven register and gear train constructions . . . in a quiet, trouble-free disc meter . . . plus three exclusive new features:

1. The register can be removed, repaired, reset to zero and resealed.
2. Meter registration can be adjusted with change gears . . . vital in reducing repair costs over the years ahead.
3. Protects against unnecessary replacement costs because you can easily repair *minor* damage without having to scrap *major* units.

Older Tridents can be converted and modernized. Both the new register and the new gear train fit standard meters, old and new.

Because of Neptune's standards and dedication to the firm policies of interchangeability and repairability, design of Model 60 has been a more difficult task, and therefore has taken a little more time.

We strongly urge you to wait and see this remarkable new Trident before you buy any sealed meters. (No need to delay your regular Trident purchases, however, because any Trident household meter you buy today can be converted later.)

Trident Model 60 is coming soon . . . watch this magazine for full details.

neptune
TRIDENT WATER METERS

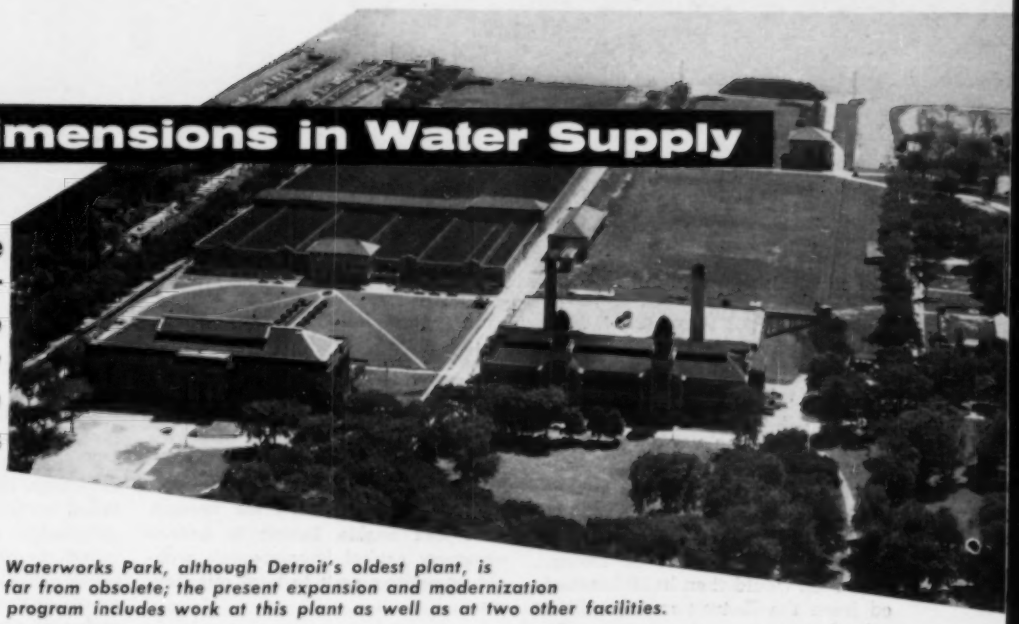
NEPTUNE METER COMPANY • LIQUID METER DIVISION • *47-25 34th St., Long Island City 1, N. Y.*
Offices in Principal Cities • In Canada: Neptune Meters Ltd., 1430 Lakeshore Rd., Toronto 14, Ont.

JUNE 1961

The American City

New Dimensions in Water Supply

. . . enable the Detroit Water Department to serve the city itself and 50 suburbs



Waterworks Park, although Detroit's oldest plant, is far from obsolete; the present expansion and modernization program includes work at this plant as well as at two other facilities.

By **GERALD J. REMUS***

Of all the problems confronting municipal officials today, the most difficult to solve are those involving the mutual interests of large metropolitan core cities and their suburban neighbors. Large central cities more frequently find it necessary to enlist the cooperation of the smaller suburbs in the development of large-scale projects and programs. This need often runs into suburban fears of being dominated and exploited by the central city. The result can be a stalemate that hampers growth and progress on both sides.

Cooperation

This is especially true in the areas of water supply and sewage disposal. Almost inevitably the problems that arise in these areas are ones which must be solved cooperatively or not at all. In the Detroit area we feel that we have developed a pattern of cooperation that is benefitting the entire area and will continue to do so for many years to come. A review of that pattern and the way in which it developed may be helpful to other metropolitan regions facing similar problems.

The Detroit Department of Water Supply served as the principal supplier of water for the metropolitan area for decades. In the last ten years, however, Detroit's role has taken on new dimensions because of the phenomenal increase in population and commercial activity and the attendant expansion of suburban areas.

This expansion produced far-reaching effects in many areas of municipal government in both the suburban communities and the central city. One of the primary needs of every growing community is an adequate, reliable supply of water for residential and industrial use and for fire protection. Most of these rapidly growing suburbs find that their original water source and system, although sufficient for their early needs, cannot keep pace with the accelerated residential and industrial growth. Suburban communities in the Detroit metropolitan area were no exception. Communities depending on wells for their supply found the water levels dropping and wells going dry. Areas getting their supply from Detroit found their distribution systems inadequate to meet the ever-increasing demand for water.

Expansion Policy

During World War II, industries and housing developed rapidly in western Wayne County. To meet the water supply needs, the Wayne County Road Commission, in cooperation with federal agencies, extended transmission mains from the Detroit system and began acting as an intermediary supplier to a number of communities. The cities, villages and townships so supplied grew rapidly and by 1960 the Road Commission delivered Detroit water to 17 communities and three institutions.

For several years before Detroit completed its Northeast Station in 1956, the summer demand for water became desperate, making water-use restrictions necessary in the entire area. While Detroit made plans to

* Mr. Remus is General Manager, City of Detroit Board of Water Commissioners, and chairman of the 1961 AWWA Convention Management Committee.

The completion of the Northeast Station brought the number of water plants in the Detroit system to three; a fourth plant is now under construction and a fifth is in the planning stage.

expand the capacity of its Springwells Station, the voters of Wayne County authorized the Road Commission to issue bonds for construction of its own water intake and treatment facilities to serve the areas south and west of Detroit. This area would then be disconnected from the Detroit supply. Other suburban communities were forming similar plans. But all of these plans were based on one premise. In order to have a financial basis for the issuance of bonds to put their plans into operation, they had to have customers who were already under contract to Detroit and for whom Detroit had already spent millions of dollars in expanding its facilities to provide a supply of water.

Basic Premises

To meet this crisis, the members of the Board of Water Commissioners and the department's management returned to a philosophy developed in 1924. In essence, this philosophy had two basic premises:

(1) Detroit's existing capital facilities and revenue base would enable it to extend Detroit service to suburban customers more economically than those suburbs could construct their own facilities.

(2) Large-scale expansion into the suburbs would broaden the revenue base and enable Detroit to finance necessary capital improvements without prohibitive costs to local rate payers.

In 1955 the Detroit Water Board decided to pursue vigorously a policy of expanding the Detroit system as a central supplier to the metropolitan area. This expansion has not been accomplished without opposition. Objections to the expansion plan came, as was expected, from both the suburbs and Detroit. Suburban officials were reluctant to accept the concept of Detroit as a central supplier for two reasons, fear that dependence upon Detroit for water might infringe upon their local autonomy in some way and, more important, doubt that Detroit's plan would bring water to their communities more quickly and economically than other methods. Detroiters, on the other hand, viewed with suspicion any plan that would share their advantages with the suburbs without a readily discernible benefit to Detroit.

The Detroit Department faced a dual task, the development of a detailed program which would give substantial evidence of our determination and ability to answer the area's needs and convincing the many authorities involved that its plan was the best for all concerned. While the engineering and administrative staffs, in cooperation with consulting engineers, worked on the technical aspects of the program, the members of the Board and management undertook a concentrated program of community relations and liaison work aimed at creating a climate of acceptance. Without the firm and active support of Mayor Louis C. Miriani, this program would have been in great difficulty and might have faced total failure. However, the mayor, who took office in 1958, was convinced that the Water Board's planning was sound and therefore gave the full force and influence of his administration to the Department's efforts. Another important factor in the ultimate success of the Detroit-area development plan was the inability of other groups to complete their plans on schedule due to an insufficient revenue base from which to finance large-scale capital construction. As the inability to meet increasing critical needs became apparent, support for Detroit's program grew.

CURRENT WATER-USE RATE SCHEDULE

	Detroit		Suburban	
	Per 1,000	Per 1,000	Per 1,000	Per 1,000
Rate Steps (Use Charge)	Cu. Ft.	Gallons	Cu. Ft.	Gallons
First 10,000 cu. ft./mo.	$1.04	13.8¢	$1.13	15.0¢
Next 90,000 cu. ft./mo.	.84	11.2¢	.92	12.2¢
All over 100,000 cu. ft./mo.	.70	9.3¢	.77	10.2¢
Minimum Bill	$1.85 per quarter		$2.90 per quarter	

Area Program

In 1959 the department management presented a complete metropolitan-area development program detailing construction schedules and

The Detroit Department of Water also operates the city's sewage-treatment plant which handles all sewage from Detroit and 38 suburban communities.

costs, rates, and long-range expansion and improvement projects through 1980. After many meetings between the officials concerned, we made an agreement for the lease-purchase of the county facilities by the Detroit Board of Water Commissioners. The agreement went into effect December 1, 1960. Under this agreement, the Detroit Water Board deals directly with the 17 cities and townships of western Wayne County in the sale of water. The water mains, storage and repumping facilities owned by the county were turned over to the Detroit Water Board and are now being operated by the board. The Detroit system pays all maintenance and operating costs. The county will continue the construction of certain mains, principally in the southern part of western Wayne County. After the plant and mains have been completed, the county will turn these facilities over to the city. From that time on, Detroit will build all plant capacity, storage, and transmission mains to provide water properly for all cities and townships in the county, and these communities will, in turn, provide their own distribution.

In addition to developing an adequate system-expansion program, Detroit was determined to demonstrate its good faith to its present and future suburban customers. One of the most effective ways of doing this was to guarantee, to these communities, some voice in the formulation of policy at the highest level. Accordingly, the city's administration and the members of the Board of Water Commissioners began an effort to obtain official representation for the suburbs on the Water Board.

As required by city charter, Detroit residents comprised the Board since its inception. An extensive public-information campaign to explain why the suburbs should have representation on the Detroit Water Board bore fruit in August 1960, when Detroit's voters approved a charter amendment increasing the size of the Water Board from four to seven members, with the provision that three of them need not be Detroit residents.

Mayor Miriani immediately appointed three new commissioners, one from each of the counties we serve. Their presence on the official policy making board helped immeasurably to cement good relations with our suburban customers.

Basic-Agreement Pattern

As to our agreements with the suburban communities we serve, they all follow the same basic pattern. Detroit designs and finances transmission mains and all facilities necessary to carry water to the community. Each community maintains responsibility for constructing adequate distribution mains to get the water from our transmission mains to its local customers. The rate charged each community is determined by a base suburban rate, plus any special charges necessitated by extending service to that particular community. We handle storage facilities on an optional basis, giving each community the choice of constructing its own peak-hour facilities, or paying Detroit to provide peak-hour storage.

Financial arrangements under the area program consist of two kinds. Some communities deal directly with Detroit and are billed by us. Other communities deal through an intermediate organization such as the Southeast Oakland County Water Authority, which receives a bill from us and, in turn, bills each member community.

The department currently supplies water to Detroit and 50 suburban communities with a total population of 3,200,000, about 41% of the state's population. The department also operates a city sewage-disposal plant which handles sewage from Detroit and 38 suburban communities.

Total assets of the combined water and sewage-disposal system are valued at over $340,000,000 and the combined revenue currently exceeds $25,000,000. This revenue constitutes the Water Board's sole source of support and we use no tax money of any kind for the department's operations. All construction and expansion is paid for by revenue bonds. In this respect, it is interesting to note that the Detroit Water Board is the only revenue-supported water

While plans to expand the Springwells Station were underway, various suburban communities were considering building their own facilities; later agreements resulted in Detroit's role as a central supplier to the metropolitan area.

utility in the country that has a Class AA investment rating.

To insure a fair and equitable cost among all its customers, the Water Board established a standard schedule of rates and charges for Detroit and the suburbs as shown in the table on page 100.

Special Charges

In addition to the use charge, suburban communities pay special charges for certain services depending upon their particular contractual arrangement with Detroit. Communities providing their own peak-hour storage facilities and building their own transmission mains pay only the rate shown in the table.

Should a suburban community want Detroit to provide peak-hour storage facilities, the community pays an additional 25 cents per 1,000 cubic feet. If it is necessary for Detroit to build transmission mains outside the city limits to furnish water to a suburban community, that community pays a "distance and elevation" charge to cover the cost of the transmission-system construction.

Billing

At the present time all of our suburban customers build and operate their own local distribution systems and do their own billing and collecting. Some communities buy directly from Detroit, others buy through an intermediate organization. In each case the Detroit Water Board bills the community or group on the basis of readings taken at a master meter installed at the points where the customer is connected to the Detroit system. The suburban organizations bill their individual consumers, adding whatever charges they feel are necessary to pay for their own local administrative and operating costs.

Detroit has maintained and will continue to maintain its low water rates to its customers even though the department is in the midst of an unprecedented development and expansion program. In the past ten years the board spent over $100,000,000 on capital improvement and the area-development program announced in 1959 calls for additional expenditure of over $172,000,000 for additional expansion by 1975. Included in the $172,000,000 is the construction of the Lake Huron facilities. This includes an intake, pumping and treatment plant that will bring Lake Huron water into the Detroit system through a 54-mile, 90-inch transmission line. We hope to have this project completed by 1967.

Under the leadership of the Board of Water Commissioners and with the support of Detroit and suburban officials, the department will continue to push its water development program ahead of schedule to meet the increasing challenge of accelerated metropolitan growth. The department is also expanding its sewage-disposal facilities. We have joined with other metropolitan organizations in a study to determine the best way to solve the problems of sewage disposal and flood control on an area-wide basis. ◄◄

AWWA Stresses Research, Education

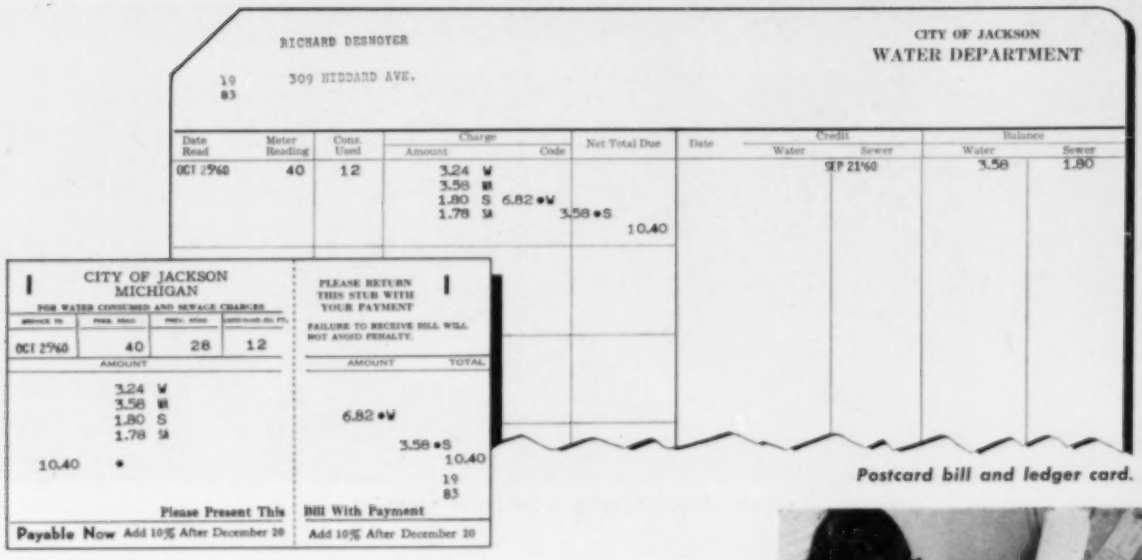
The appointment of two new standing committees by American Water Works Association President C. F. Wertz serves as another step toward the achievement of AWWA's goal of "improved water service—through water systems, self-sustained and adequate to meet the growing needs of each community."

The Committee on Research, under the chairmanship of Dr. Thurston E. Larson, will develop a program of both basic and applied water-supply research and make recommendations for the establishment of a permanent research foundation within the framework of AWWA, with a view toward eventual employment of a technical staff to implement those recommendations. Dr. Thurston is head of the chemistry section, State Water Survey, Urbana, Ill.

Herbert E. Hudson, Jr., partner in the firm of Hazen and Sawyer, New York, N. Y., is chairman of the Committee on Education. This committee will take over the development and expansion of AWWA's management-education program, formerly part of the Water Utility Advancement program. Other duties include responsibility for all phases of AWWA education activities. This committee will also make recommendations for developing a workable program.

H. E. Hudson, Jr. *Dr. T. E. Larson*

Both committee chairmen will be ex-officio members of the Association's Board of Directors. ◄◄



Postcard bill and ledger card.

Jackson's Water Billed Sensimatically

By **JOSEPH M. ROGEVEN**
Superintendent
Water Department

Jackson, Mich., has 14,000 domestic services billed quarterly and 500 commercial services, billed monthly, all metered. We do the sewerage billing as well as the water billing, both charges appearing on the same bill.

There are four girls in the Billing Department. One answers the telephones and gives information to the public and to our collection office, figures the special billings, handles non-payment accounts and other related work.

Billing

The other three girls do the actual billings on our two Burroughs Sensimatic machines. All accounting operations are done by machine. The work is rotated each month so that at the end of three months, each girl is ready to start in on the same operation she did three months previously.

For instance, one month she will do residential billings, the controls, figure factory billings, prove penalties and bill factories. The second month she will do residential billings, special billings, allowances and figure factory billings. The third month she will do all the cash postings, post penalties and do the addressograph and graphotype work required.

Thus each girl is familiar with all machine operations and, should one of them be absent from work for vacation or illness, we have experienced employees to carry on the work.

In the general office are two girls whose work deals partially with the billings, in that they check the meter readings previous to billing. ◄◄

Burroughs Sensimatic accounting machine prepares bills and posts ledger cards for the Water Department of Jackson, Mich.

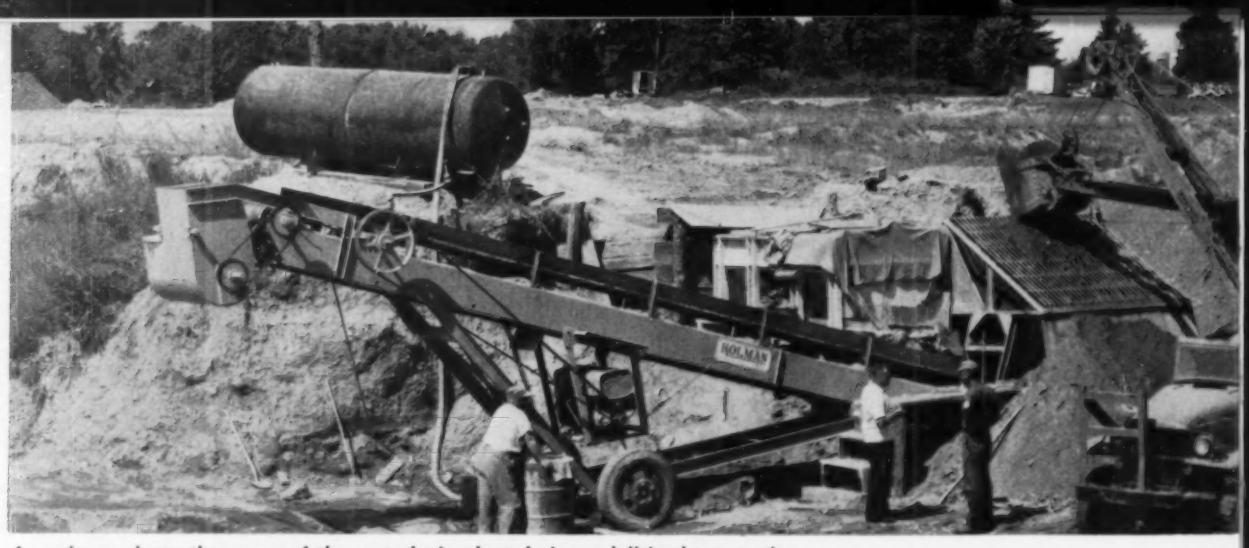
WATER AND SEWER RATES

Quarterly water rates are:
$0.12 per 100 cubic feet for the first 30,000 cubic feet
$0.06 per 100 cubic feet thereafter

Quarterly sewer rates are:
$0.15 per 100 cubic feet for the first 30,000 cubic feet
$0.06 per 100 cubic feet thereafter

Monthly water rates are:
$0.12 per 100 cubic feet for the first 10,000 cubic feet
$0.06 per 100 cubic feet for the next 90,000 cubic feet
$0.027 per 100 cubic feet for the next 4,900,000 cubic feet
$0.022 per 100 cubic feet all over 5,000,000 cubic feet

Monthly sewer rates are:
$0.15 per 100 cubic feet for the first 10,000 cubic feet
$0.06 per 100 cubic feet for the next 90,000 cubic feet
$0.027 per 100 cubic feet for all over 100,000 cubic feet



A workman cleans the screen of the central-mix plant during a lull in the operation.

Soil-Cement Street Program

. . . climaxes overall municipal improvement in Thorp, Wis.

By **RAY ZABROWSKI**
City Engineer

The start of a three-year street-construction schedule in 1960 climaxed an improvement program that dates back over a decade. Our small (pop. 1,670) community decided in 1948, that rural living definitely needed to have urban improvements.

Accordingly, we built a biofilter sewage treatment plant that year, an underground water-storage reservoir in 1953, grade school additions in 1957, and a large swimming pool in 1958.

Due to our limited population and the cost of previous improvements, we spent a considerable amount of time studying our available materials in an attempt to put them together to obtain good street construction at a minimum of cost for our proposed 20-block-per-year program. To obtain good drainage, we chose a portland cement concrete curb and gutter with a total width of 30 inches. Because a gravel pit lies less than two miles from the city, we use a cement-stabilized (soil-cement) gravel base covered by a two-inch road-mixed bituminous mat for the base and surface courses.

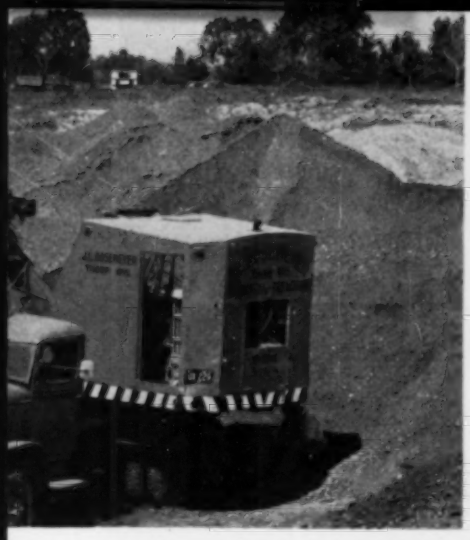
Prior to street construction we check all underground utilities and correct any inadequacies found. To obtain adequate storm drainage, we are building several blocks of new storm sewers over the three-year period.

To construct the cement-stabilized gravel base, we bought a small central mix plant consisting of a combination gravel screen and Kolman conveyor and installed it at the gravel pit. A small pug mill was also purchased and attached to the top end of the material belt. From nearby contractors we rented a bulldozer to push the gravel into a pit where the rented Quickway power shovel elevates it to the screen. One of our own trucks hauls portland cement, purchased from a local dealer, to the pit where it is placed in a homemade storage hopper. We had a nearby machine shop construct a small feeder belt to convey the cement to the gravel belt where it is dumped. Combining the gravel and cement with water takes place in the pug mill after which the mixture is fed by gravity into dump trucks and hauled to the street under construction. The granular base material allows the use of small quantities of cement.

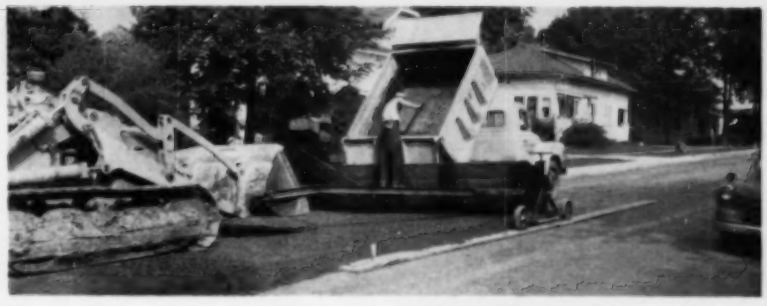
We designed and had constructed for us a spreader box to distribute the base material on the street. It consists of twin screws, driven by a small engine, in a material trough. The whole assembly is mounted on a frame to which are attached two wheels on each end to provide horizontal motion with vertical control. One set of wheels rides on the concrete gutter, the other set on a plank placed to grade on the center of the street.

The loaded truck with raised box,

The completed street will give many years of trouble-free service.



Getting ready to dump, a truck approaches the home-made spreader.

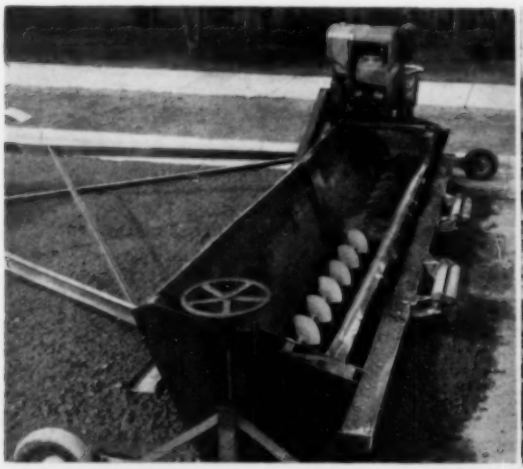


A city-owned Caterpillar tractor pushes the spreader and truck forward as the box empties; the spreader's wheels ride on a plank set to grade.

backs up to the spreader with the rear truck wheels contacting the spreader's rollers. The city-owned Caterpillar No. 933 Traxcavator is then bolted to the frame of the spreader and pushes the whole assembly forward, distributing the base material to the required thickness of six inches when compacted. A rented 13-wheel, rubber-tired roller is then towed over the base by our other Traxcavator, obtaining the required compaction. A curing seal completes this portion of the operation. A few days later the contractor applies the two-inch bituminous surface and the street is ready for traffic.

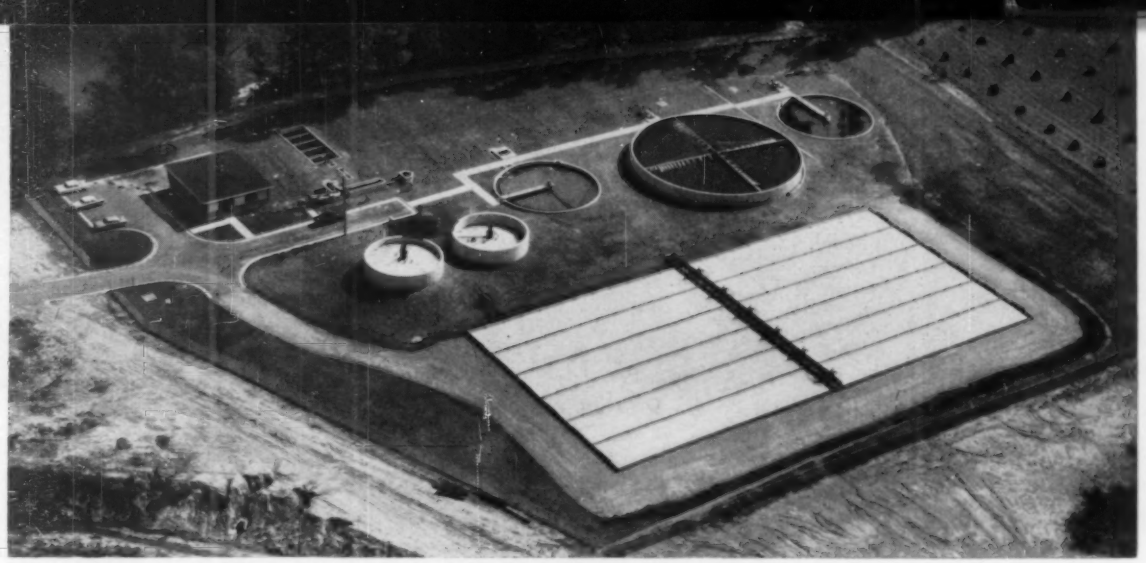
The cement-stabilized gravel base costs the city 60 cents per square yard for equipment purchased (one third of $7,000, each year for three years), material and rented equipment. This price does not include city labor and equipment rental charges on our own vehicles. The low cost makes possible this construction of our permanent streets.

We doubt that any of our previous or even our proposed improvements including a high school, municipal building and golf course have had or will have a greater impact on the life of our people than the present street construction. No longer will our thoroughfares be impassable in the spring, dusty in the summer and muddy in the fall. But without the forward-looking planning of our city officials and some dedicated citizens and without the economies incorporated in the pavement design, we might still be looking into the future for the beginning of our street program. ◄◄

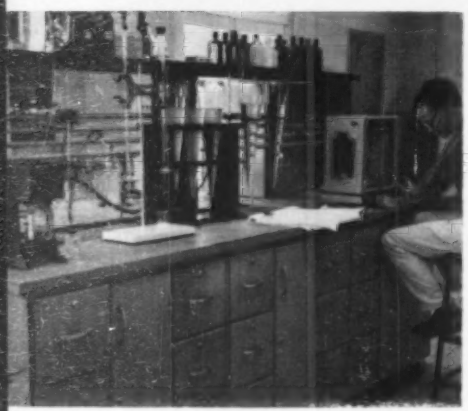


A small engine operates the twin screws in the spreader; the wheel in the foreground is for vertical control.

While the rubber-tired roller compacts the left side of the street, spreading operations continue on the right.



Tarboro's new sewage treatment plant, located adjacent to the Tar River, is the second in the city's history.



The plant's laboratory is equipped to make all the tests necessary to determine plant efficiency.

Tarboro, N. C., helps protect its river resources by getting . . .

Back In the Business of Sewage Purification

By W. D. BARLOW, P. E., and VIRGIL TRUITT*

The dedication of a new sewage treatment plant probably constituted one of the least impressive but most important events of Tarboro's bicentennial celebration. The town's first plant, constructed in 1918, had long been obsolete and for years raw sewage discharged directly into the Tar River. North Carolina stream-sanitation laws passed in 1951, plus a subsequent special act of 1957, gave impetus to the plant-construction program. The chain of events started with the appointment of L. E. Wooten and Company to perform the necessary engineering design services in December 1957. Tarboro voters approved a $480,000-bond issue in 1958 and construction started July 1959. One year later the plant went into service.

The Federal Government participated with a grant of $204,300.

A grit chamber, primary clarifier, trickling filter, secondary clarifier and chlorine contact chamber comprise the basic sewage-treatment facilities. The plant also contains two separate heated sludge digesters and the necessary related equipment and facilities.

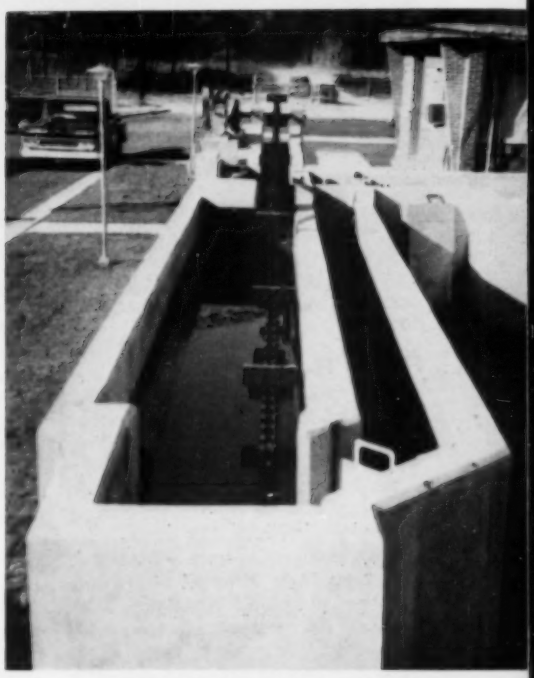
Incoming sewage flows into a Walker Process mechanically cleaned grit chamber and then by gravity into the 50-foot-diameter-by-10-foot-side-water-depth primary clarifier. The latter provides 2.17 hours detention at an overflow rate of 830 gallons per square foot per 24 hours. The sludge or underflow from the primary clarifier is drawn intermittently through a telescoping valve into a pump pit where a 150-gpm sludge pump lifts it into the digester tank. Overflow from the primary clarifier goes to the filter-lift and recirculation pump station. Here two Fairbanks-Morse vertical, suspended, wet-pit pumps rated at 1,000 gpm at 18-foot head perform the dual function of lifting sewage to the trickling filter and recirculating filter effluent to filter influent at a one-to-one ratio with both pumps running. Should one pump be out of service, the filter can still operate satisfactorily but with a slight loss in efficiency. During emergency, in case of power failure, or when it is necessary to remove the filter from operation, an overflow arrangement diverts sewage around the filter directly to the secondary clarifier and on to the Tar River.

The 90-foot-diameter trickling filter, with its average stone depth of five feet, can receive a BOD loading of 2,320 pounds per acre foot and a hydraulic loading of 20.6 mgd. A Walker Process distributor applies sewage to the media. Effluent from the filter flows into a 50-foot-diameter-by-8.5-foot-water-depth secondary clarifier which provides a detention of 2.3 hours and an overflow

* Mr. Barlow is a member of the firm L. E. Wooten and Company, consulting engineers of Raleigh, N. C., and Mr. Truitt is superintendent of water and sewers, Tarboro, N. C.

The trickling filter which is entirely above grade, has an effluent channel surrounding the base.

A 2,800-foot-long force main carries the sewage from the pumping station to this mechanically cleaned grit chamber.



rate of 660 gallons per square foot per 24 hours. Underflow from the secondary clarifier returns to the primary clarifier via dual, vertically suspended, wet-pit pumps rated at 250 gpm, each at a 10-foot head. Overflow passes through a Parshall flume used not only to measure and record flow but also to regulate the Wallace & Tiernan chlorinator. A flash mixer in the chlorine contact basin rapidly disperses the chlorine solution throughout the sewage flow. After being held for 31 minutes at average flow condition, the completely treated sewage is discharged to the river. Both primary and secondary clarifiers contain Chain Belt equipment.

Digestion

Raw sludge undergoes anaerobic digestion in two 35-foot-diameter-by-23-foot-liquid-depth, heated sludge digester tanks equipped with Pacific Flush Tank floating covers. The digesters may be operated either in parallel or series for stage digestion. Digestion loading is 3.4 cubic feet per capita. Digested sludge is withdrawn to the drying beds for open-air drying either by gravity or pump. The sludge-drying beds have walls constructed of precast concrete posts and prestressed concrete planks and the design area of the beds is two square feet per capita.

The digester-control house adjacent to the digester tanks contains a gas-fired heat exchanger, recirculation pump, two plunger-type sludge pumps, and auxiliary facilities.

The fully equipped combination office and laboratory building permits the performance of necessary routine tests and maintenance of records required for proper operation and control. All motors except those in the digester building are controlled from a free-standing, motor-control center in the laboratory building.

A seven-foot-high, chain-link security fence encloses the entire plant site, where the grounds have been topsoiled, seeded, and landscaped.

The interceptor sewer varies in size from 14 inches to 24 inches in diameter. Extremely poor soil conditions made it necessary to place piles under all such structures as manholes and piers for elevated sections of the sewer line. Where the sewer line was elevated, we used Armco spiral-welded steel pipe set on precast-prestressed concrete-pile-supported piers on 40-foot centers. All buried line consists of reinforced concrete pipe lined on the inside with a bitumastic coating and joined with rubber-gasket joints. Manholes were constructed of reinforced concrete with the top elevations set at the flood stage expected once in five years. Watertight manhole covers prevent infiltration of flood water and the manholes are vented by a two-inch galvanized steel pipe extending above the maximum flood stage.

The pumping station, located in the flood plain of the Tar River, de-

Table I

Sewage Flows Used for Design of Interceptor Sewer and Sewage Pumping Station

Period	Popula-tion	Av. Dry-Weather Flow Gal/Cap/Day	Max. Rate of Flow Gal/Cap/Day	Average Daily Dry-Weather Flow	Peak Rate Flow
1957	10,000	71	280	0.707 mgd	2.57 mgd
1980	13,000	85	280	1.06 mgd	3.5 mgd
2010	17,000	101	280	1.55 mgd	4.75 mgd

livers sewage to the treatment plant through 2,800 feet of 14-inch east-iron force main. To prevent possible flooding, the top of the dry well had to be extended above the flood level making the pumping station 30 feet deep. A Chain Belt mechanically cleaned screen placed at the influent of the station removes any solids that might clog the pumps or damage other equipment. The screened solids are sorted, ground into finer particles, and returned to the sewage flow.

Pump Room

The pump room contains three Fairbanks-Morse vertical, close-coupled, raw-sewage pumps. Two are rated at 15 hp., 1000 gpm against a total dynamic head of 41 feet. These can handle the design flow of the treatment plant. The controls for the two small pumps are arranged so that they may alternate or pump together in parallel. When paralleled they will deliver approximately 1,400 gpm. The third pump, rated at 60 hp with a capacity of 2,400 gpm at a total dynamic head of 61 feet, operates only when the other two pumps cannot handle the flow. In order to insure that no sewage backs up into dwellings during peak flow, the large pump is sized for 2,400 gpm whereas the treatment plant capacity is only 1,800 gpm. When sewage flow exceeds plant capacity, overflow from the plant collects in an overflow bypass at the plant inlet and flows directly to the chlorine-contact chamber and then into the Tar River. A Master Level Control air-bubble system automatically controls pump operation in accordance with the liquid level in the pump wet-well. All motor controls including the air-bubble control system are enclosed in a free-standing motor-control center.

Although the impellers, motors, and starters are designed only to handle the flows to the year 1930, the pumps are designed to handle flows expected for the year 2010. The only work necessary to increase station capacity to ultimate flow is to replace smaller components with larger ones.

Surveys showed the existing interceptor sewer to be grossly overloaded, resulting sometimes in sewage overflow to the river at two locations. During flood stages, sewage backed up into some dwellings. The new, low-level, interceptor sewer running in and parallel to the river's flood plain was designed to alleviate these conditions.

According to census records, Tarboro has a 1960 population of 8,366. Growth studies indicated that future population would be 13,000 people by 1980, which is the sewage-treatment-design period, and 17,000 people by the year 2010, the design period for the interceptor sewer, pumping station, and force main.

In determining the design rates of flow, we made special allowance for industrial waste requirements for three industries: a laundry and two hosiery mills contributing approximately 70,000 gallons per day of waste with a five-day BOD of 224 pounds. Extensive flow measurements, made with a recording flow meter installed in a weir box on the main sewer outlet, provided data that, coupled with the industrial allowance, indicated the flows that should be used for design purposes (See Table I on page 107).

Table II (below) shows present and estimated future sewage flows used for the design of the sewage treatment plant.

Flows of the Tar River fluctuate widely depending upon rainfall and runoff. The maximum flow on record is 52,800 cfs which produced a stage of 44.13 feet elevation above sea level at Tarboro. The minimum record flow of 35 cfs produced a stage of about ten feet at Tarboro. The seven-day-duration low-flow with a ten-year frequency is 83 cfs.

Total construction costs, representing six separate contracts, amounted to $552,705. The plant alone came to $367,811. To amortize plant and sewer costs and cover operating expenses, Tarboro adopted a sewer service charge based on 60% of the water bill. The estimated budget is as follows:

Salaries (Operators)	$ 12,000
Clerk (billing)	2,600
Taxes	500
Chemicals	1,500
Utilities	4,000
Supplies	1,000
Schools (Operators)	300
Miscellaneous	1,000
Debt Service	16,588
Total	$ 39,488

Four full-time operators provide around the clock operation under the supervision of the superintendent of water and sewers. It is the intent of town officials to see that their approximately $600,000 investment in waste-treatment facilities is protected and that these facilities perform properly.

The facilities were planned under the administration of Mayor C. W. Wickham, who has been succeeded by Mayor H. T. Bailey. Captain W. B. Howard, USNR, is the town manager. ◄◄

Table II

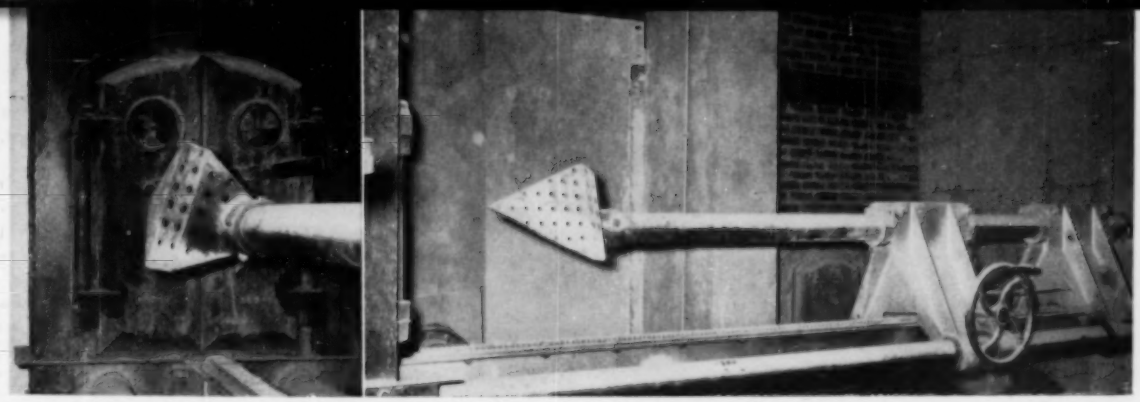
Sewage Flows Used For Design of Sewage Treatment Plant

Period	Popula-tion	Av. Dry-Weather Flow Gal/Cap/Day	Max. Rate of Flow Gal/Cap/Day	Average Daily Dry-Weather Flow	Peak Rate Flow
1957	10,000	71	200	0.707 mgd	2.0 mgd
1980	13,000	85	200	1.10 mgd	2.6 mgd
Design	13,000	100	200	1.3 mgd	2.6 mgd
2010	17,000	110	200	1.89 mgd	3.4 mgd

Table III

Equipment Suppliers
(other than those previously mentioned)

Motor Control Center, pump station—Lexington Electrical Products Co., Inc.
Check Valves, pump station—Rensselaer
Gate Valves, pump station—Reading-Pratt & Cady
Gate and Check Valves, treatment plant—M&H Valve & Fitting Co.
Sluice Gates & Flap Gates—Armco Drainage & Metal Products Co.
Motor Control Center—treatment plant—General Electric Co.
Flow Meter—Foxboro Co.
Lubricated Plug Valves—Homestead Valve Mfg. Co., Inc.
Gas Meters—Rockwell Mfg. Co.
Chlorine Mixer—Mixing Equipment Co., Inc.
Laboratory Equipment & Supplies—Fisher Scientific Co.



The revolving grate, together with the insertion of this mechanical stoker into the refuse pile, greatly increases the burning capacity; note the air ports in the stoker head.

Revolving Grates Make the Difference

Princeton, N. J., boosts the burning capacity of its old incinerator furnaces and reduces manpower requirements by installing a new type of grate

Princeton's unusual incinerator will be featured at the June 16th meeting of the New York-New Jersey Metropolitan Chapter, American Public Works Association.

By **ARTHUR T. BROKAW, P. E.**
and **Professor STEVE M. SLABY***

Remodelling an existing installation often proves more difficult than the design and construction of a new facility. Numerous regulations and controls concerning the expenditure of public funds leave little or no room for experimentation, thus adding to the problem. Yet it is the city's duty to keep its facilities as modern and efficient as available funds and local plant conditions allow.

Princeton, in keeping with this responsibility, did experiment with a new type of incinerator-furnace design that proved successful. The new design was then incorporated in two existing furnaces when they were remodeled.

The original plant, completed in 1932, consisted of two circular furnaces having an inside diameter of ten feet and a rated capacity of 24 tons each or one ton per hour per unit. The grates were of the stationary type, requiring typical hand stoking and cleaning by raking out the residue. These units acquired a remarkable service record, for the borough made no repairs to the furnaces until 1958; a trouble-free period of 26 years.

Plant Enlarged

In 1954 the Borough's Engineering Department drafted plans to enlarge the plant by adding a third furnace designed to incinerate an additional 100 tons a day. Objectives used as criteria in developing the furnace design included:

- **An efficient burning rate without the use of auxiliary fuel.**
- **A unit that would be free from major maintenance problems for a long period of time.**
- **Safe, simple and reliable operation even under conditions of power failure.**
- **A minimum capital investment without sacrificing these objectives.**

This led to the construction of another circular furnace with a 14-foot internal diameter, having a dome-shaped roof with a charging port at the top similar to that of the old units. However, the one big difference is the revolving grate of the B. F. Shaughnessy type, the first of its kind ever to be used in an incinerator. The new installation also included a mechanical stoking bar which can be used to increase the burning capacity of the furnace.

The furnace has 150 square feet of horizontal burning area and a volume above the grate of 1,400 cubic feet. The combustion chamber has a volume of 1,000 cubic feet excluding the flues. The furnace construction consists of a ¼-inch-thick steel-plate outer casing well insulated from the self-supporting interior masonry structure.

Boosts Burning Capacity

The revolving grate, when used properly, increased the burning rate of the furnaces as much as 200% since the principle of "over-fire" combustion has proven to be most effective in refuse incineration. For

---

* Mr. Brokaw is Borough Engineer for the Borough of Princeton and president of the New York-New Jersey Metropolitan Chapter, American Public Works Association. Professor Slaby is on the staff of the School of Engineering, Princeton University. He worked with the borough in the design and construction of the new furnace and remodeled units.

Various methods of modernizing the charging operation and adding storage facilities are now under investigation.

example, the Princeton furnace is loaded through a charging hole at the top of its dome roof. The refuse falls onto the grate which is kept in a stationary state while the loading takes place. The refuse piles up in a conical shape, permitting the operator to ignite the furnace with a match at two or three of the "stoking" doors. When the temperature of the furnace reaches its optimum point for efficient burning and long furnace life (about 1800°F) the operator revolves the grate by merely pushing a button which starts the electric motor. The revolving action equalizes and distributes the heat around the conical pile of refuse resting on the grate, since the entire conical surface of the refuse pile becomes exposed to the combustion chamber "side" of the furnace as the grate revolves.

The present furnace has six "stoking" doors with a dumping grate located at each door so that the furnace can be operated in an almost continuous manner. As the grate revolves, the burned residue on the surface of the conical pile falls to the "stoking" doors and is dumped via the dumping grates to a hopper underneath the furnace.

Rotating Grate

The rotating grate gently stirs the refuse pile and, as the burned residue falls to the base, unburned material is exposed and burned. By using the mechanical stoking bar which also contains a series of small openings for the injection of air into the refuse pile, burning capacity can be increased to 200 tons a day over short periods. However it increases the temperatures and probably will affect the life of the furnace if it operates in this way for extended periods.

Experience shows that the furnace needs only one or, at a maximum, two large "stoking" doors for efficient operation. Actually, the name is a misnomer; the furnaces do not need stoking at all except with the mechanized stoking bar when considerable increase in burning rate is required. Since the grate can revolve, the operator can discharge all burned residue through one "stoking" door position. The residue is so thoroughly burned that it can be used for cover material at the adjacent Princeton sanitary landfill.

An experimental brush burner and incinerator, developed by Professor Slaby, is located at the landfill site. This unit may someday provide the answer to the disposal problems of the small community.

The revolving grate worked so well that we installed similar units in the two existing furnaces when they were modernized in 1958. As a result Princeton now has a flexible and extremely reliable incinerator system.

Before making the 1954 addition, those responsible considered all types of furnaces and selected the circular furnace with the self-supporting masonry-dome roof as best for the purpose from the structural, incineration, and engineering point of view. The points in favor of this type included:

- **A self-supporting masonry structure that can expand and contract without resistance, resulting in less maintenance.**
- **Maximum heat utilization. With a properly designed dome and the correct furnace height the heat radiating from the dome and furnace walls concentrates on the conical refuse pile in the center of the furnace.**
- **The revolving grate is a mechanically simple and reliable device that increases burning capacity and eliminates stoking. Yet, in case of power failure, operation can continue as in a fixed-grate unit. This eliminates the necessity for idle standby equipment.**

While the furnaces do a good job of incineration, the method of charging them and the general operation of the plant itself are in need of updating.

All material must be burned during the hours of collection since the facility has no storage capacity and the situation results in forced feeding with resultant smoke and fire on the charging floor. When a group of trucks arrives at the plant simultaneously, delays result.

Then there is the problem of increasing capacity. At present, five men operate the plant five to six days each week. Two men start work about 6 a.m., cleaning the furnaces and firing them when the first loads of refuse arrive. The remaining three men work the regular day shift. Under this system the incinerator burned 11,564 tons of refuse in 1959 and 10,978 tons in 1960, or about 220 and 210 tons per week respectively. The facility can handle an increase in load but eventually a full second shift would be needed. A second shift would require storage facilities.

Storage Pit Studied

The borough is now investigating the possibility of constructing a storage pit and installing hoppers and charging gates over the three furnaces to eliminate present charging problems. A bucket-and-hoist arrangement mounted on a monorail and operated from a stationary console appears to be the best way to transfer refuse from the pit to the hoppers. Such an arrangement would increase plant capacity under improved operating conditions.

In this connection we face the problem mentioned earlier of keeping up-to-date. The citizens of the community know their refuse is picked up and disposed of regularly. How disposal is handled and under what conditions is of little or no concern to most of them. Those responsible for this task know that improvements are needed; the big job is to convince the people of this fact so they will be willing to pay for it. As part of our program in public relations, we always welcome visitors at the plant to inspect the operation and novel construction.

The members and guests of the New York-New Jersey Metropolitan Chapter of the American Public Works Association will have an opportunity to visit the plant at the 1961 spring meeting, to be held at Princeton on June 16th. ◄◄

In the city's newer subdivisions it is the responsibility of the subdivider to provide for streets, storm and sanitary sewers, and water mains.

Don't "Suburb" Me In

Oklahoma City preserves its vigor and independence by annexation

This attractively landscaped dividing strip provides parking on Oklahoma City's Park Avenue.

By **PAUL E. CLOWERS**
Planning Director

Oklahoma City well knows the plight of municipalities completely encircled by independent and generally uncooperative suburban local governments. Consequently the city began, in January 1959, an annexation program to insure that the land area surrounding it would develop in an orderly manner under sound standards and controls.

Since then developers have submitted 75 subdivision plats containing 15,000 new residential units or housing for 40,000 people. We require that these be fully developed within two years so that these new homes will be in existence within that time.

Our subdivision controls are exacting; they rule out slip-shod developments. They require that preliminary plats be submitted for the approval of our planning staff and for the Park, Traffic, Water and Engineering Departments' recommendations.

After the final plat has been approved, the developer must submit a performance bond to assure us that all utility improvements will be completed within the two-year period. The required improvements are:

1. 26-foot-wide paving of either six-inch portland-cement concrete or five-inch asphaltic concrete over a six-inch base.

2. Minimum eight-inch vitrified-clay sanitary sewers.

3. Minimum six-inch cast-iron water mains.

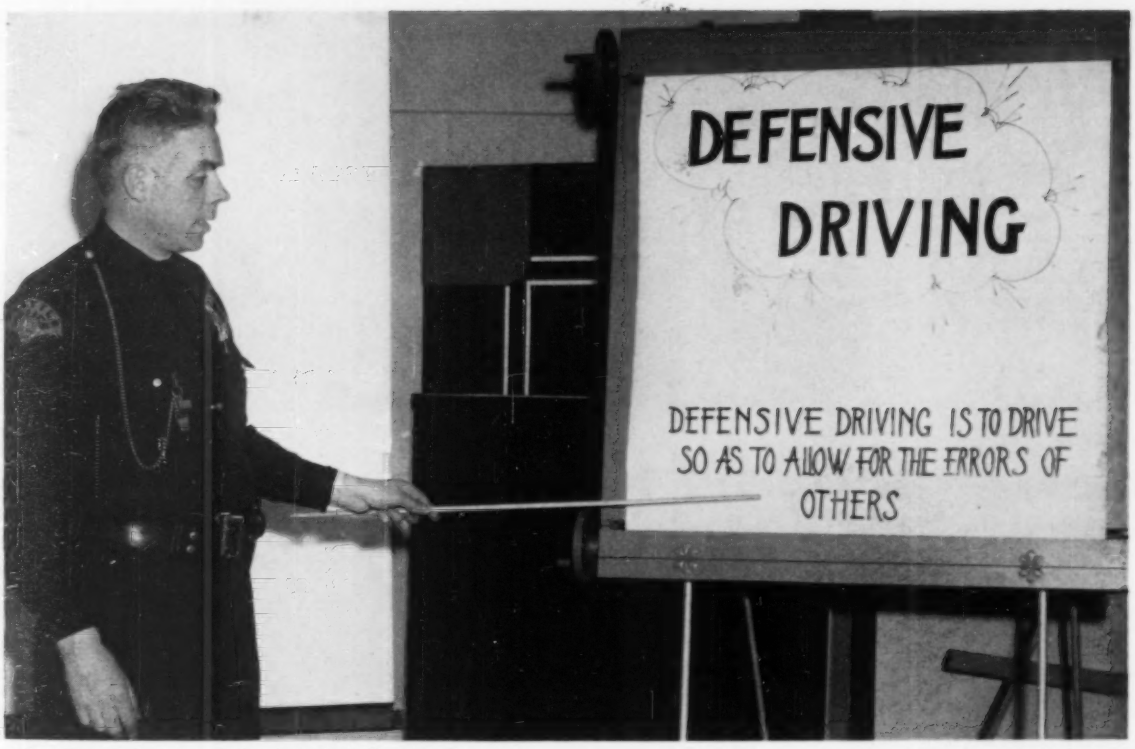
4. Drainage facilities including storm sewers.

Our planning program is based on the conviction that it must be composed first of an adequate capital-improvement program and physical development of streets, sewers, and water facilities and secondly of logical land use and zoning.

Because this is a semi-arid region, water supply is an ever-present problem. In the past, we have built two lakes each holding 75,000 acre-feet but, since both are dependent upon the North Canadian River, we have no assurance of an adequate surplus during a dry year. To provide this needed surplus, the Oklahoma City Council recently approved a $55,000,000 program for an aqueduct to transport water from lakes in southeastern Oklahoma.

To assure careful supervision of land use and strict enforcement of zoning regulations, the Building Department was put under the direct supervision of the Planning Director.

The open cleanliness of a city too young for blight and slums, with pleasant year-round climate and a friendliness inherited from pioneer parents provides a good basis foundation for the Oklahoma City of tomorrow. ◄◄



Officer Ben Johanson of the Seattle Police Academy.

Better Drivers Save Cities Money

By **W. L. ROBINSON**, American Automobile Association*
Washington, D. C.

Better selection, training, and control of drivers of municipally owned vehicles are saving taxpayers money, and making thousands of municipal vehicles last longer. They are also reducing accidents involving city employees and reducing repair costs, damage claims against cities and employee time lost because of injuries.

Your city can utilize the practical methods for improving fleet operations and maintenance which the National Committee for Motor Fleet Supervisor Training has developed over the past 15 years. The Committee works with some 50 U. S. colleges and universities. Department heads and supervisors responsible for vehicle operation and maintenance can attend one-week, or 16-evening, training courses at nearby campuses.

Seattle, Wash.

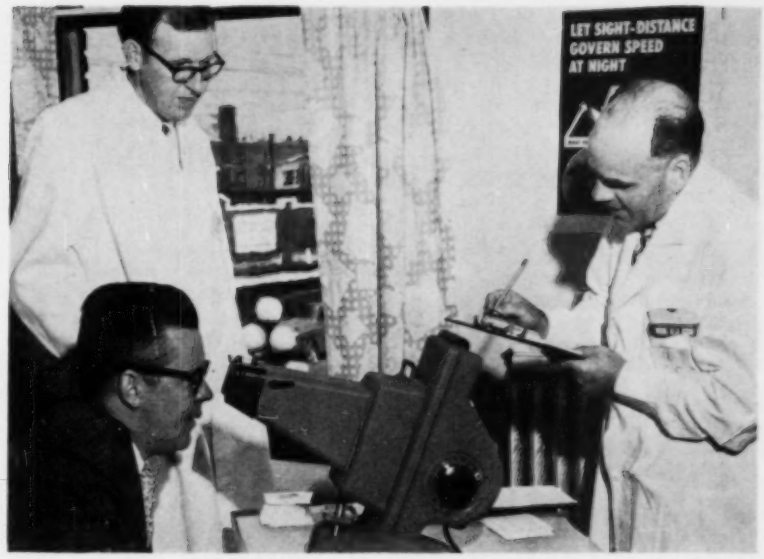
Among the standout municipal chiefs is John J. Hoban, Seattle safety coordinator.

Hoban's program of driver training and control reduced claims against the city for motor vehicle accidents from $48,322 in 1957 to $28,709 in 1958. In 1957, the city had 1,619 vehicles; in 1958, 1,649 vehicles. In both years repair costs ran around $26,000-$28,000, while the city collected from third parties for accident damage $12,000-$14,000. In 1959, with the Seattle municipal fleet grown to 1,694 operating vehicles, accident frequency dropped to the lowest yet, 2.58 per 100,000 miles, with 13,640,533 miles being rolled up by these vehicles.

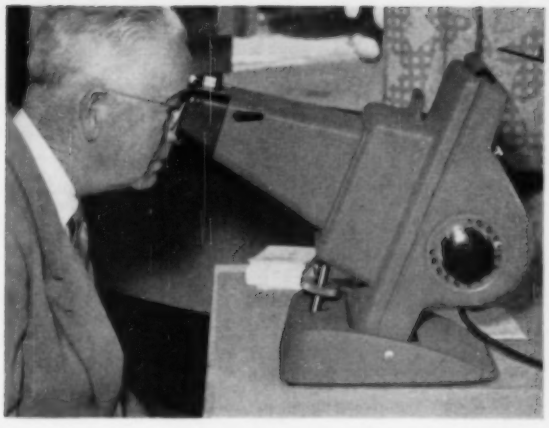
Claim costs and repair costs went up slightly in 1959 because of higher costs of parts, to $32,808 for repairs, and to $31,123 for claims, but, offsetting these, the city collected $17,564 from third parties for damage to city vehicles. This is where the better driving by city employees paid off. To further emphasize the results of the excellent Seattle municipal program the 2.58 frequency of accidents per 100,000 miles may be compared with the national rate for municipal fleets of 4.15 accidents per 100,000 miles or one every 24,068 miles. Seattle municipal employees drove 38,750 miles without a mishap, and their frequency rate was 38% below the national city-fleet rate.

M. B. Mitchell, Chairman of the Streets and Sewers Committee of Seattle City Council, a councilman for over 18 years, is highly enthusi-

* Mr. Robinson was Chairman, 1957-1958 of the National Committee for Motor Fleet Supervisor Training, composed of 20 leading organizations in the motor transportation, safety, and insurance fields. He is Associate Director of the Traffic Engineering & Safety Department of the American Automobile Association.



Seattle's Mayor Gordon S. Clinton (right), Chairman of Public Works Roy W. Morse (below, left), and Superintendent of the Water Department J. Ray Heath (below, right) demonstrate their belief in the necessity of good sight and vision in good driving, and their backing of the safe municipal driving campaign. With the mayor is John J. Hoban, the city's safety coordinator, who has sparked an outstanding driver-training-and-control program for city drivers and vehicles.



astic about these accomplishments. He gives special credit to the University of Washington, College of Engineering, for providing training opportunities for supervisory personnel from the city's many departments.

Los Angeles, Calif.

Clayton M. Allen, the genial top engineer of the Los Angeles Department of Water and Power, throws all transportation and construction workers into a single group and shows a frequency of 3.67 accidents per 100,000 miles for 1959-60. This means estimated savings of $2,750,000 since 1945 when the department really started to check drivers and give them road tests.

Allen says the spearhead of his program of driver training and testing was his attendance and that of eight supervisors at fleet-supervisor and maintenance courses at UCLA conducted by Neyhart and Bob Glenn, University extension specialist.

Alexandria, Va.

Alexandria, Va., sent Robert Evans, safety inspector, to a course at the University of Maryland and to another at the University of Virginia in early 1959. Here is what Kenneth W. Smith, Director of Traffic of Alexandria, has to say:

"We feel that this training has been very helpful in selecting personnel to operate city equipment, particularly the heavy truck type and other similar equipment. Also it has aided in preparing training courses for these operators."

Tacoma, Wash.

Tacoma, Wash., has developed an outstanding program for handling city-owned vehicles as a result of two employees, George Graham, fleet and stores supervisor, and Dan Julian, safety and training supervisor, having attended Neyhart courses at the University of Washington. They drew heavily on their training to develop a program wherein Tacoma has set up an Equipment Rental Office and rents vehicles to various city departments, thus getting a realistic concept of the actual costs of operation. Any damage beyond normal wear must be accounted for before repairs are undertaken. The equipment-rental program is closely coordinated with driver safety activities through the Fleet Safety Committee composed of supervisory personnel from city departments.

Oakland, Calif.

W. J. Steffey, Superintendent of the Municipal Shop, says that personnel at the supervisory levels have attended these fleet-supervisor training courses for the last eight years

and that in 1960, for the first time, Oakland sent individuals from the working-foreman and master-mechanic level with such satisfactory results that an even wider application of this type of training will be used in the future. These men attended the motor-maintenance short courses, one of seven sponsored by the National Committee.

Vancouver, B. C.

Following his return from the fleet-supervisor course at the University of Washington, Sgt. J. H. Lavery, fleet supervisor of the Vancouver City Police Dept., set up a driver-testing program with a test run. The qualifying mark was set high, much higher than driver-licensing tests, and if a driver failed to qualify he was checked in three months. If faults were not corrected and no improvement was seen, a Board of Officers would sit to consider his future.

Alameda County, Calif.

Olof E. Anderson, County Surveyor and Road Commissioner, says, "I sent three men to five-day courses at the University of California. The fleet-supervisory course stressed accident prevention, safety measures, drivers' tests and driver training. This knowledge was immediately incorporated into my fleet program on a continuous and periodic basis and has resulted in a reduction in our accident rate and a resulting larger output of work."

Summary

Last year, of 1,728 supervisors attending one of the 50 courses and conferences, 94 were from city governments, 52 from county, and 103 from state governments. On the average, each trained supervisor was responsible for 100 drivers and mechanics.

Admitting that motor-vehicle problems involved in city, county, or state operations are vastly different from those faced by over-the-road commercial rigs and buses, the National Committee now is considering special courses for municipal supervisors. ◄◄

TRAINING COURSES

To assist in driver training, the National Committee, Motor Fleet Supervisor Training, sponsors a number of courses. Some, that will be held in the immediate future (with the names of course coordinators appearing in parenthesis), include:

Fleet Supervisor

June 12-16, Evanston, Ill.
Northwestern University
(Glenn Carmichael)

July 17-21, Edmonton, Canada
Alberta Safety Council
(R. P. Lawrence)

September 11-15, Univ. Park, Pa.
Penn State University
(Amos E. Neyhart)

September 18-22, Toronto, Canada
Ontario Safety League
(Frank C. DeVenne)

January 1962, Montreal, Canada
Quebec Safety League
(Paul LeBoeuf)

January 1962, University, Ala.
University of Alabama
(W. L. Rickard)

Maintenance

November 1961, University, Ala.
University of Alabama
(W. L. Rickard)

February-May 1962, Syracuse, N. Y.
Syracuse University (Evening)
(Burton B. Crandall)

Trainers of Commercial Drivers

September 18-22, Montreal, Can.
Quebec Safety League
(Paul LeBoeuf)

October 2-6, University Park, Pa.
Penn State University
(Amos E. Neyhart)

Two-in-One Utility Truck

Norwalk, Ohio, has what is believed the first electric utility truck with a rotating platform and a crane. The unit, designed by Superintendent W. J. Gates for the city's electric distribution system, is mounted on a GMC chassis with a tilt cab. The body, made by McCabe-Powers of St. Louis, Mo., has a hydraulic platform 11 feet long and four feet wide. The platform will revolve through an entire 360 degrees and will rise to 30 feet above the ground.

The rotating platform permits the men to do the same kind of line work that they perform in a truck with a two-man basket—and the Norwalk platform truck can have three men on it. Mr. Gates designed a line truck because he wanted to avoid the expense of two separate trucks. The new unit combines the operation of two trucks into one.

The crane will lift from eight to ten tons. Its 26-foot boom will set poles handily; the boom can be brought to rest on the rear of the truck. The truck unit also has a hydraulic pole digger that will dig a 24-inch hole nine feet deep. Inside the cab is a General Electric two-way transistor radio.

Norwalk, a city of about 13,000, has its own electric generating plant, which is currently being enlarged by a $1,500,000 addition to its boiler room. ◄◄

Norwalk's new truck has a revolving platform, a hydraulic crane, and a post-hole digger.

Before: a dozer accumulated all the trash in this alley.

After: the alley is once again fit for travel.

The city's public works department hauled away all the refuse.

The Norwich litter baskets aid the clean-street effort.

A Thorough Clean-Up Campaign

. . . results in extensive improvement in Paterson, N. J.

By **FRANK X. GRAVES, Jr.**
Mayor

After one of the most severe winters in its long history, Paterson, N. J., embarked on an extensive spring-clean-up campaign.

We formed a citizens' committee, headed by the president of the Junior Chamber of Commerce, to aid in the solution of this problem. The committee requested and gained the support of several other local active groups, to generate enthusiasm and provide a measure of prevention for the future. These groups purchased 15 new Norwich litter baskets and placed them on street corners in the business section to supplement the 65 existing containers. The Bureau of Public Works empties the baskets on a regular schedule.

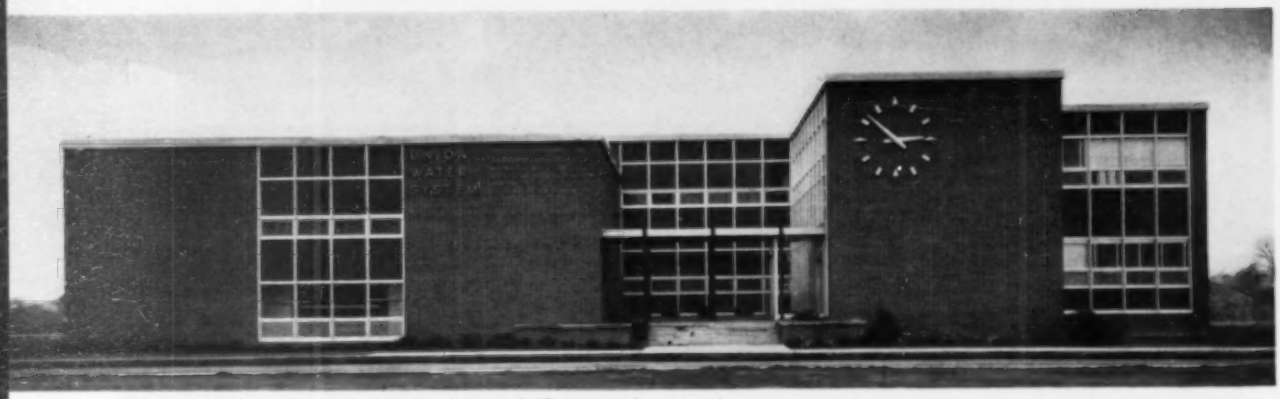
Cooperation was widespread but not complete. Local newspapers enthusiastically published editorials and pertinent information. In only a few cases was it necessary for municipal inspectors to file complaints in Municipal Court. As a result of these, some offenders paid fines. The word quickly spread that the city meant business. This provided the impetus for the few that had remained immune to the previous publicity.

Strengthened municipal ordinances played an important part in the campaign. We found the old ones to contain loopholes which we quickly closed. The litter and health laws are now adequate and provide good tools for the city attorneys on the few occasions when complaints reach the courtroom.

The Board of Public Works personnel gathered and removed the winter's accumulation of sand and ashes which they had spread for traction during and after snowstorms. One Tennant and five Wayne sweepers dispatched the debris. Two Sicard flushers on International Harvester chassis provided the finishing touches to the paved streets. In addition, our truck drivers hauled away 500 truckloads of trash, ranging from old hot water heaters and screen doors to tree branches and bed springs.

The city also inherited a number of old automobiles. In previous winters the police had threatened to invoke the ordinance which allowed them to tow away and impound vehicles which hindered snow removal as a result of illegal parking. Last winter we did more than threaten. Most owners paid the resultant fines and towing charges. A few apparently decided their vehicles were not worth the assessed costs and abandoned them. We shall sell these on bids and use the proceeds to pay the towing fees. Any excess will supplement the general fund.

The ward-by-ward and street-by-street clean-up campaign is playing its part in the total effort to transform Paterson's old look to the new look. Several other projects also aim toward this end, the most important of which is demolition and land clearance for a urban redevelopment project, which includes 45 acres. A second, similar project is now in the planning stage. ◄◄



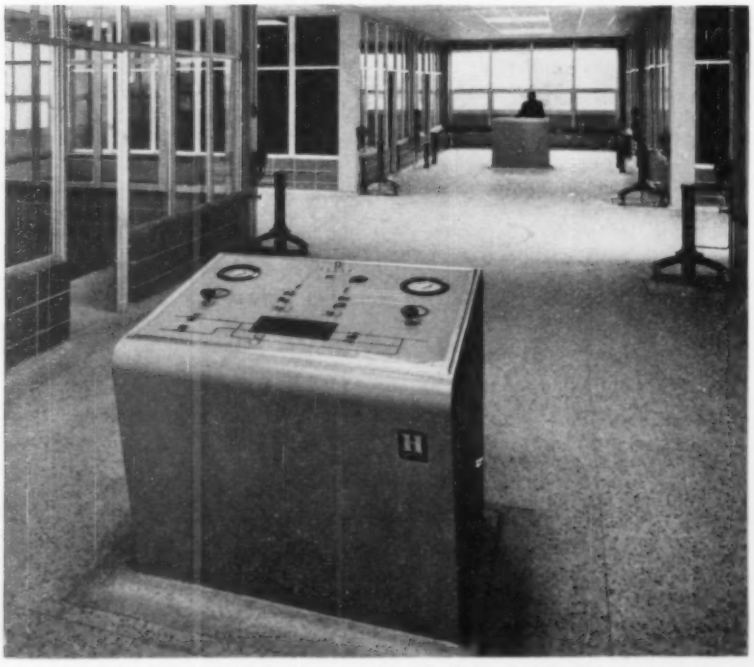
Modern both inside and out, this 9.6 mgd filtration plant can be enlarged to 38.4 mgd according to a symetrical pattern.

One of Canada's newest . . .

The Union Water System

. . . provides everything needed for a modern functional and efficient water utility

By C. G. RUSSELL ARMSTRONG
Consulting Engineer, Windsor, Ontario



Glass and aluminum enclosures surround each of the double filters.

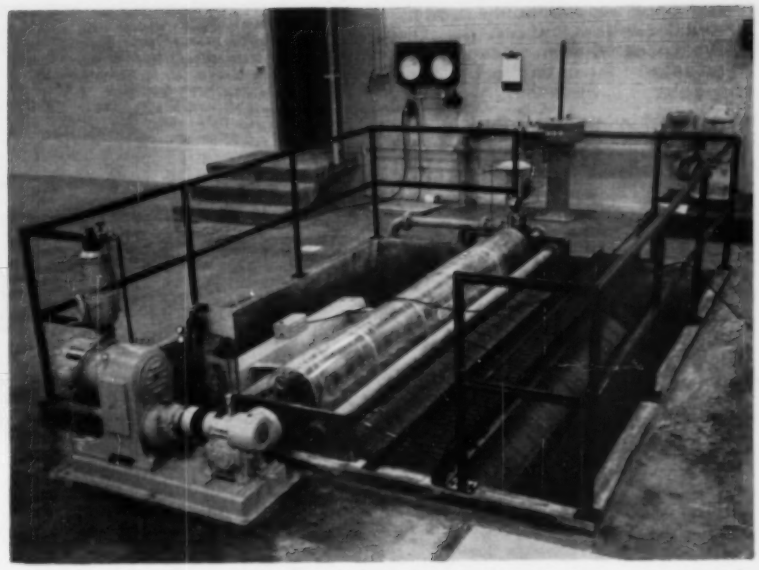
Last fall more water, up to 9.6 mgd, became available to the residents of Essex County, Ontario. The responsibility for providing water to the people of this county, located across the river from Detroit, rests with the Ontario Water Resources Commission. Latest in the Commission's effort to keep on top of the job was the completion of the first phase of the Union Water System which serves the cities of Leamington and Essex and four townships. The overall plan takes into account the need for more water to meet the demand as the character of the area changes from rural to urban.

The raw-water intake, located at Union, extends into Lake Erie about 1,400 feet. It consists of 54-inch-internal-diameter Armco corrugated-metal pipe laid approximately two feet underneath the floor of the lake to the intake crib. Heavy bitumen linings inside and out protect the pipe. Under gravity-flow conditions it has a capacity of 48 mgd.

The low-lift pumping station comprises an inlet chamber and coarse hand-raked screen and then divides into twin chambers one of which contains a Chain Belt automatic traveling screen which removes solids greater than about one-half inch in size.

Four Johnston vertical-turbine-type pumps, driven by U. S. Motors, pump raw water to the treatment plant through a 2,500 feet long 24-inch-diameter reinforced-concrete pipe line. Two of the pumps have ratings of 2.4 mgd at 100-foot head and two are rated at 4.8 mgd at 105-foot head. By means of a right-angle gear drive a Rolls Royce diesel engine automatically takes over one of the 4.8-mgd units in case of electric-power failure.

Other facilities include Bristol



Complete or partial removal of algae by this micro-strainer assures longer filter runs between washings.

telemetering equipment to transmit the water level in the well and pump operating conditions to the filtration plant, and a Canadian Controllers motor-control center.

The filter plant contains equipment to micro-strain, clarify, filter, sterilize, store and pump the water for distribution. While it has an initial capacity of 9.6 mgd, the layout is such that the plant can be arranged symetrically for a total of 38.4 mgd.

Micro-strainer

Raw water first passes through a ten-foot-diameter-by-ten-foot-long Glenfield & Kennedy micro-strainer for the removal of algae. The fabric has a minimum size opening of 1/7000 of an inch. Automatic controls increase its speed and wash-water pressure as resistance to the passage of water through the machine increases, assuring the most economic and efficient operation.

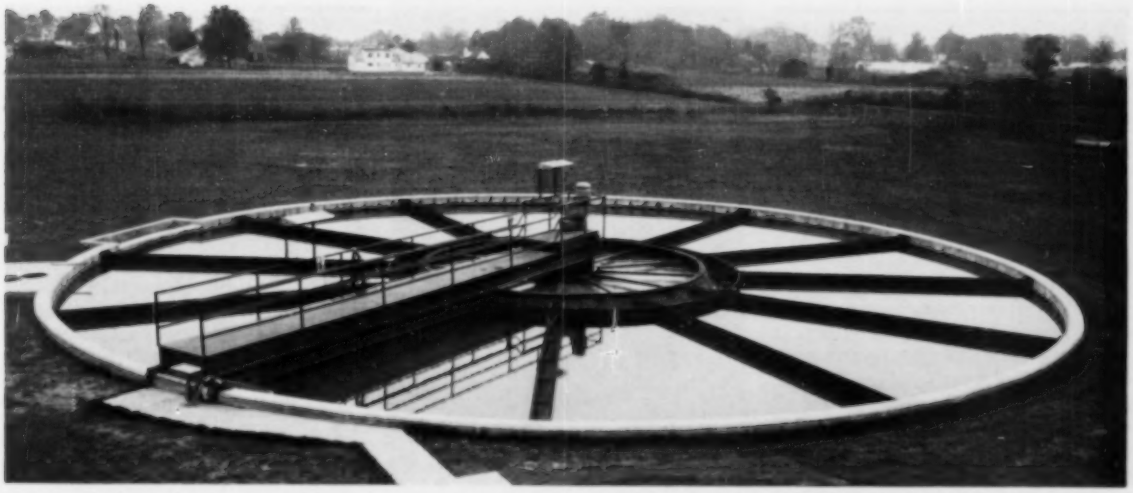
Next the water flows to a 94-foot-diameter-by-19-foot-side-water-depth Graver clarification unit. One of the largest units of its type installed in Canada, it is capable of providing clarification of 9.6 mgd of water to produce an effluent having not more than 5.0 ppm of suspended solids and turbidity.

Four double-type filters, each 18 by 36 feet, provide final polishing of the water. Rated at 2.4 mgd each, they are totally enclosed in aluminum curtain wall and glass enclosures. They have pre-cast bottoms with five three-inch layers of gravel and 27 inches of sand. Equipment includes Palmer surface washes, Honeywell consoles and controls, Allis-Chalmers butterfly valves and Armco sluice gates.

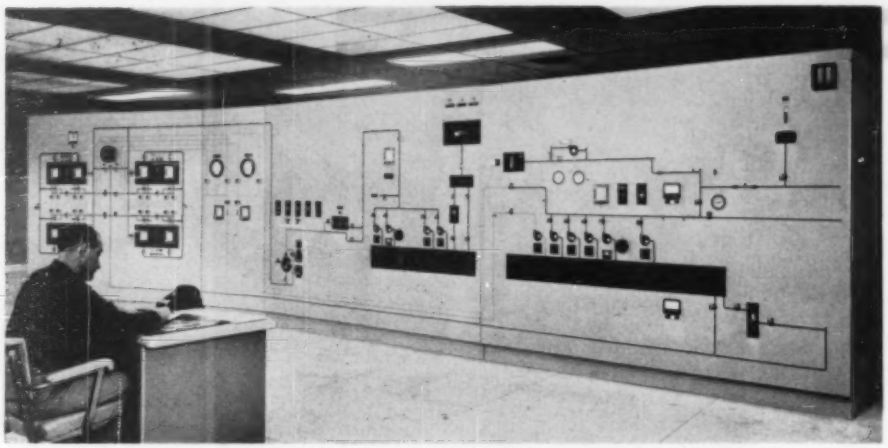
Automatic operation of the filters includes automatic backwashing when any filter becomes dirty, followed by re-introduction into operation after it has been cleaned.

Filtered water is stored in a 2,000,000 Imperial gallon clearwell.

The main pump room contains five high-service pumps and one wash-water pump, all C. H. Wheeler units. The distribution pumps range in size from 1.2 mgd to 12 mgd and



This solids-contact-type clarification unit, rated at 9.6 mgd, is one of the largest single units of its type in Canada.



The miniature instruments on this flow-diagram master control panel inform the operator about the operational condition of the plant at all times.

the wash-water pump has a capacity of 4,800 gpm. The 4.8 mgd high-service pump is a dual-drive unit having both an electric-motor drive and a diesel-engine drive.

Liquid Alum Used

Signals received from the master control panel automatically control two dry-chemical feeders fed by a bucket elevator and two liquid alum proportioning pumps. Each of the units is capable of feeding up to the ultimate capacity of the plant. U. S. Rubber Uscolite piping conveys the dry chemical slurry from the feeders to the clarifier and lead pipe is used for the liquid alum. The two lead-lined liquid-alum tanks have a capacity of 4,500 Imperial gallons each and will serve the needs of the plant until ultimate capacity is attained.

Chlorination facilities consist of three 2,000-pound-per-24-hour Wallace & Tiernan chlorinators and a chlorine residual recorder. One machine is used for pre-chlorination and one for post-chlorination, with the third unit serving as standby for either application. These units are connected to ten points of application with Uscolite pipe.

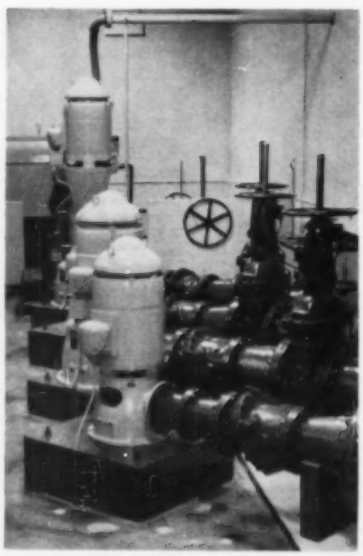
The residual recorder records the residual amount of chlorine in the water as it leaves the filters in the case of pre-chlorination, and as it enters the distribution system in the case of post-chlorination. When the water becomes inadequately chlorinated or over-chlorinated the unit gives a signal for the operator to adjust the dosage.

Facilities provide for storage of six one-tone chlorine cylinders, and a 5,000-pound-capacity scale permits mounting two cylinders at one time.

The controls provided on this plant are substantially a combination of pneumatic and electrical control systems. The pneumatic systems interpret, indicate, and record the flow and levels in the various portions of the plant. They utilize and transmit these functions to the several units which make use of them in proportioning the operation of the plant in relation to the flow passing through it.

Complementary to and integral with the basic pneumatic system is the electric sequencing which carries out the necessary switching functions on valves, pumps, and other items of equipment.

The whole control system is based on a centralized master control panel located in the main control room. Laid out in a simple flow diagram using miniature instruments which enable the operator to see the operational condition of the plant at all times, the panel contains all indicators and recorders necessary for operation of the plant.



The four raw-water pumps provide a combined capacity of 14.4 mgd; one 4.8-mgd unit (at the rear) has a combination electric-motor and diesel-engine drive.

If necessary, the operator may convert the plant to a fully manual station, either operating under push button control or, in the event of some major disaster, under hand wheel facilities as plants were operated 50 years ago.

Trunk mains from the plant consist of a four-mile-long, 30-inch-diameter reinforced-concrete main to the Town of Leamington; a 12-inch-diameter, four-mile-long, cement-lined cast-iron main also to Leamington via a different route; and a 14-mile-long, 12-inch-diameter cement-lined cast-iron-and-asbestos-cement main to the Town of Essex.

Elevated Tank

A 333,000-Imperial-gallon Horton Steel Works elevated tank 115 feet high occupies a high point along the 30-inch line. The line to Essex includes an automatic booster station located at about the half-way point.

The Honorable William K. Warrender, Q. C., Minister of Municipal Affairs and the Honorable William Murdoch, M.P.P., Speaker of the Ontario Legislature, officially opened the plant on November 18, 1960. The writer's firm designed and supervised construction of the facility for the Ontario Water Resources Commission, of which A. M. Snider is the chairman. General manager and chief engineer of the Commission is Dr. A. E. Berry. ◄◄

New Times—Better Police

By **JOSEPH F. WELDON**
Police Director
Newark, N. J.

Many new concepts of police administration are commonplace today in most municipal police departments throughout New Jersey. Formerly few or no entrance requirements were necessary for appointment to many of the police forces in New Jersey. There were no testing processes. Patrolmen were selected through political connections, or be-

cause of the friendship or recommendation of persons of influence in the municipality concerned. These methods were not in the best interests of the public nor did they provide the public support and confidence so necessary to a successful police department.

Today civil-service testing exercises the influence and has established open competitive lists from which recruits are selected by the police administrator. Here a new concept has come into play. This is the careful, thorough screening by the department itself and the rejection of all candidates who do not survive pre-appointment investigations.

In Newark, for example, a special squad of police superiors interview and instruct the candidates on the filling out of a twelve-page booklet of questions. Every statement made by the candidate is checked and verified.

In 1960 this screening resulted in acceptance of only 34 recruits from over 600 applicants. In addition to present safeguards, the use of psychiatric examinations is being considered. Some municipalities in New Jersey are using this now.

The narrow concept of employing only residents of the municipality is another that is undergoing change in New Jersey. In Newark, the administration is formulating plans to request legislation to permit recruitment state-wide. With a broader base for selection we can uphold high standards for candidates with a stronger possibility of maintaining full strength in the department.

Training

Today's administrator knows that his policemen must not only have a strong back and a brawny arm, but must have recruit and continuous in-service training to develop and maintain efficiency.

In Newark, we provide a full time, 16-week course of recruit training in a well staffed, modern and well equipped Police Academy. This training has been accepted by the City College of New York as credits toward degrees in police science. A growing number of neighboring municipalities have requested Newark's Police Academy to train their recruits. This request has been granted when less than full classes are being conducted at the Academy.

The soundness of this concept is indicated by widespread endorsement of a bill which would provide compulsory training for all new police candidates and would set standards for graduation and appointment to any police department in the state.

Many of our municipal policemen are sent at the expense of the municipalities concerned to such training centers as Northwestern University, the Federal Bureau of Investigation National Academy, Indiana University, Seton Hall University, the Baruch School, and the National Training Center of Lie Detection in New York City.

In Newark, through the Department of Personnel, the administration is underwriting part of the expense of college courses designed to fit an employee for his job.

Assignments

Civil Service promotion exams have placed merit above favoritism and influence in the attainment of higher rank. In the matter of assignments not entailing promotion such as detective, plainclothes, etc., a growing concept is the evaluation and personnel rating process.

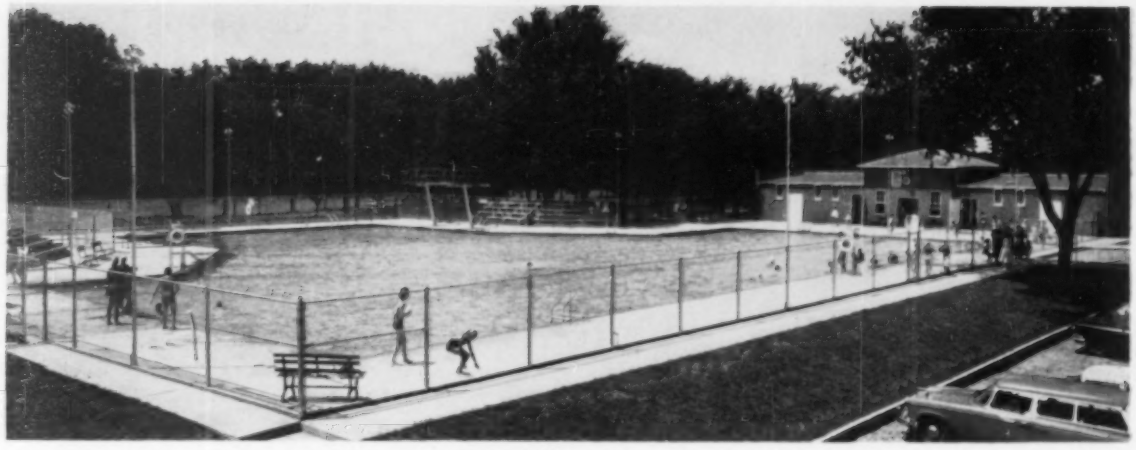
Newark has developed an intensive evaluation program for the entire department. It was started two years ago in the Detective Division

to determine individual effectiveness of members assigned. After a year, as a result of this evaluation, about 20% of the members of the Detective Division were reassigned to other duties.

This objective evaluation program applied to other than detective assignments was then used for selection of new members for detective duties.

Employee evaluation is a continuing process and rating forms are now in use to evaluate the performance of every patrolman, sergeant and lieutenant of the force.

These are but indications of how the passing years change the concepts of police administration. There will be others. ◄◄



The renovated pool contains a new diving area (upper left) and a new wading pool (extreme right).

More Swimmers Per Dollar

. . . result from modernizing an outdated pool

By **BRUCE GILMORE*** Columbus, Neb.

What do you do with an old swimming pool that's too small and has an inadequate filter and recirculation system? We found that modernizing would be better and more economical than building another pool.

The old pool in Columbus, Neb., built 30 years ago, was inadequate in every way according to modern swimming-pool standards. Every hot Sunday afternoon, swimmers paddled shoulder to shoulder, and sun bathers lazed elbow to elbow on the decks. Prospective patrons could not enter because the pool and deck literally would not hold any more people. Users complained of the overcrowding, the water condition, and the inadequate equipment. In addition, the State Board of Health warned of inadequate sanitation. The City Council ordered an investigation of the two possible solutions: construction of a new pool to supplement the existing one or renovation and enlargement of the old pool.

A new pool carried an estimated price tag of $150,000. It would not have solved the overcrowding situation, however, because most swimmers would naturally congregate at a modern pool in preference to the old, unsanitary one.

We decided to take another look at our old facility. It consisted of a 60-by-150-foot rectangular concrete pool with 27% of the area devoted to deep water and diving facilities. Recent studies prove that 85 to 90% of all pool patrons remain in the area where they can touch bottom. Our studies also indicated that whereas the divers had an adequate area, we simply did not have enough square feet of pool in the depth range of 3 to 5½ feet.

The concrete structure itself was in excellent condition. The bathhouse was also in good repair but needed some modernizing and additional basket space.

Filters

The filters consisted of a battery of pressure-sand units with a capacity of 500 gallons per minute. A filter room below deck level enclosed them. The filters received water from the main drains at the deep end of the pool. The filtered water returned through four large inlets at the shallow end. This method of circulation caused the worst complaint. High chlorine contents in the shallow water caused small children's eyes to burn. No simple solution was available because the water had to flow from the shallow end to the deep water area to circulate and we had to maintain a chlorine residual at the deep end. Because the filters were too small, a slow flow-through rate resulted. To maintain a chlorine residual at the deep end required heavy chlorination in the shallow portion where the smallest children played.

The narrow concrete decks around the pool had sunk away from the walls resulting in puddles which never disappeared. The fencing was old and inadequate. The wading pool had no separation from the main pool and was unsanitary and woefully small. Estimates indicated that enlarging and renovating the existing pool and bathhouse would cost $100,000. The council decided to adopt the renovation figure and submit the scheme to the voters.

Two factors determined the choice of renovation rather than constructing a new pool. The existing pool occupies the most convenient location in the city. The landscaping provides an attractive setting. Other recreational areas adjoin this facility at the entrance to a large multi-purpose park. In addition, the estimated $50,000 to be saved by renovation weighed heavily in making the choice.

At the election, several other bond

* Mr. Gilmore is city engineer and also engages in consulting work.

issues failed but a large majority approved the proposed renovation. The city immediately awarded the contract and work began.

A new floor in the deep end of the pool resulted in a depth ranging from 2.5 to 5.5 feet for the entire 60-by-150-foot area. Because the 50-yard length is a standard competitive swimming distance, we installed anchors for racing lanes in the existing end walls and painted lane stripes on the bottom. The new floor substantially increased the relatively shallow pool area which most swimmers prefer.

To accommodate the divers, we added a deep area adjoining one of the long sides of the original pool, making it T-shaped. The new diving section contains exactly the same area as the old one. We also installed two new three-meter and two one-meter Swimquip diving boards on opposite sides of the new addition.

Park crews used broken concrete from the old deck to build a retaining wall.

Horizontal multicell filters were installed below deck level for appearance and improved hydraulics.

The Filter

In an attempt to reduce the 100% relative humidity in the filter house which promoted rusting of the steel tanks, we removed the roof. The old filters, although inadequate in capacity, were in good condition. We added an additional battery of 24 General Filter pressure-sand cells with a common header to increase the filtering rate.

To aid pool cleaning, we installed vacuum fittings around the perimeter, connecting the vacuum line to the old filters. With this arrangement the operator vacuums the entire floor while continuing to operate the newer bank of filters.

New inlets, 15 feet apart, around the entire perimeter of the pool solved the problem of the excessive chlorine dosage formerly necessary in the shallow-end. A new cast-iron header and return line to the filters replaced the original clay line.

The contractor removed the narrow, uneven decks and replaced them with concrete decks 12 feet in width around the new perimeter of the pool. The addition of the diving area brought the pool facilities to within a few feet of a lagoon at a much lower elevation. Because the lagoon provided an ideal location for fishing and ice skating, it could not be disturbed. We solved the problem by using broken concrete from the old decks to build an attractive retaining wall which bridged the 12-foot vertical gap and in this way prevented new fill from washing into the lagoon.

The old wading pool was dangerous because there was no fence preventing toddlers from entering the main pool. We built an additional wading pool and separated both from the main swimming and diving area with a fence. The new regulations admit only children whose parents accompany them. This frees the lifeguards from baby-sitting duties and allows them to concentrate their attention on the main pool. Admission to the wading pools is now free.

Lighting

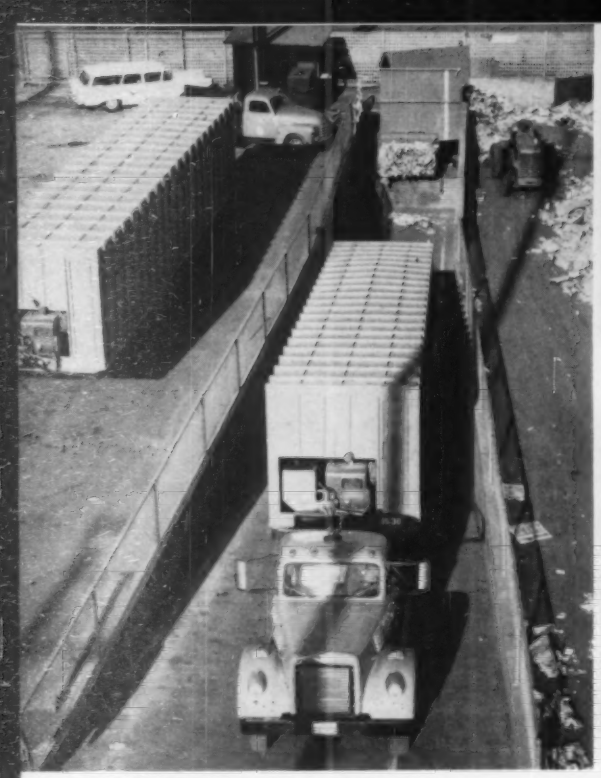
Modern flood lighting, which provides 1.5 foot-candles per square foot on the deck and water area, replaced the old standards. The park department promptly salvaged the old lights and standards. They installed them on the bank of the lagoon to provide illumination for evening ice skating. New Refinite 500-watt, wet-niche underwater lights in the deep portion of the pool now enhance the pool's appearance for night bathers.

A new six-foot Chain-Link fence now encloses the entire bathing area, bathhouse and filters, separating the spectators from the bathers. Spectators enjoy the four-foot-wide walk around the outside of the fence. The fence prevents bathers from tracking foreign material from the grass into the pool.

Rearrangement of the bathhouse resulted in more efficient basket storage. We removed the chlorinator from this room and rearranged the basket layout to increase the capacity by 50%. The installation of rotating ventilators reduced the previously unbearable relative humidity in the dressing rooms.

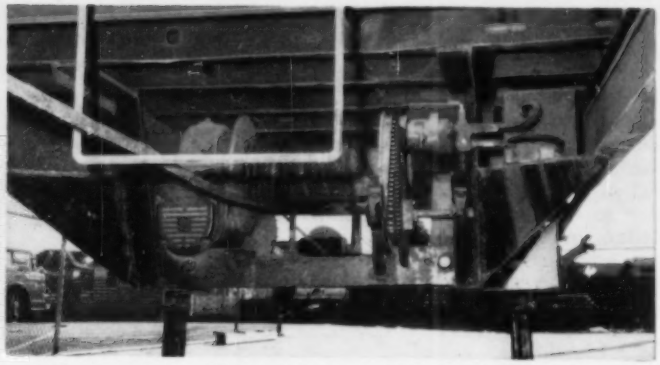
A season ticket for a family costs $10; for individuals, $4. Single admissions are 40 cents for adults and 25 cents for children.

We have operated an entire summer season since the completion of the improvements. The additional capacity of the pool has resulted in accommodating all customers—even during the hottest week-ends. At times, 1,500 people, more than ever previously counted, have used the pool during one day's operations. No one complains of overcrowding. Swimming teams now participate with renewed interest because of the regulation 50-yard length of the pool. The council, the voters and the swimmers proudly boast of the improved municipal swimming pool in Columbus. ◄◄



The loaded trailer begins its trip to the sanitary landfill.

Refuse to be compressed enters this charging opening in the hopper.



The underbody winch pulls the plate to the rear, dumping the load.

Novel Refuse Transfer Station

. . . combines with disposal at a sanitary landfill to effect a $5,000-per-month saving

By **GEORGE BUNDY**
City Manager
Santa Monica, Calif.

An extraordinary refuse transfer station coupled with disposal at a sanitary landfill enables Santa Monica, Calif., to save $5,000 a month compared to previous disposal by incineration. The compaction and method of transferring refuse at the station is the key to the entire operation.

The new method of collection made possible by the change pleases our customers too. They now mix cans and bottles with their garbage and paper rather than separating these items as formerly required. The landfill makes no distinction between combustibles and non-combustibles as the incinerator did, enabling us to eliminate the special third collection a week for the bottles and cans. This will result in a reduction of packer equipment and personnel, making a further saving.

During the eight years the city operated the incinerator, operation, maintenance and depreciation costs rose from $3.05 a ton to $4.10 a ton in spite of the average daily tonnage increasing from 105 to 184. In addition the Los Angeles Air Pollution Control District tagged the incinerator as a smog manufacturer, despite the fact that Santa Monica enjoys an enviable reputation for smog-free air.

Landfill Opened

But the straw that broke the camel's back for the incinerator was the opening in 1960 of a large sanitary landfill in Mission Canyon, a short ten miles by freeway from the city limits. Los Angeles County established this facility to convert a portion of the canyon to future recreational use by charging $1 per ton for dumping.

Our original studies indicated that if we shuttled each of our 18 Leach Packmasters to the landfill, the savings would be nil. However, if each of these 16- to 20-yard compaction trucks could dump at some central point, larger vehicles could transport the refuse to the landfill with an estimated saving of $60,000 per year. This total anticipated saving resulted from an estimated refuse cost of $2.25 per ton, $1 of which is the charge for dumping at the landfill. It also included large transport equipment capable of hauling 18 tons of compacted refuse per load.

The anticipated savings made our course clear: we embarked on the new venture. The S. Vincen Bowles Company designed and manufactured the refuse-packing mechanism and hauling equipment to equip the transfer station. Three specially-designed trailer bodies cost $13,790 each; two tractors furnish the motive power at $11,780 apiece. The balance of the total construction cost of $98,000 includes the transfer station together with its stationary compactor.

The reinforced concrete transfer station consists of a 75-foot-long tapered ramp, 20 feet wide at the top and 12 feet at the bottom, which leads into the 40-foot-long-by-9-

Refuse in the compression chamber awaits the next trailer.

Heavy chains prevent truck movement while loading.

foot-deep pit. At the far end, a concrete foundation, 12 feet wide and 18 feet long, supports the packing mechanism four feet above the pit bottom. The packer consists of the following:

- **double-acting hydraulic cylinder of nine-inch diameter and seven-foot stroke.**
- **packing blade, 3 feet high and 6 feet wide, which exerts 90,000 pounds of pressure.**
- **compression chamber, 6 feet square and 3 feet high.**
- **steel hopper.**
- **hydraulic vane pump, 90 gpm, with a capacity of 300 gallons.**
- **60-hp pump motor.**
- **solenoid valve to reduce hydraulic shock.**
- **automatic control of three cycles per minute.**
- **alternate manual control.**

Each day's loading and hauling operations begin when the driver opens the rear door and backs his 58-foot semi-trailer down the ramp into the pit. A stripe painted on the floor warns him when the rear of the trailer abuts the packing mechanism. Steel chains then anchor the trailer to the packing foundation to take up the 90,000-pound loading thrust.

The same two Tractomotive loaders which used to charge the incinerator now fill the hopper with refuse which the collection trucks have deposited earlier on the floor adjacent to the hopper. The stationary packer forces the refuse into the trailer, pushing against the unloading bulkhead which starts the loading cycle adjacent to the rear doors and gradually moves toward the front of the trailer as the refuse forces it. The trailer's own hydraulic system creates a resistance to the movement of the plate, thereby packing the refuse to a greater degree. Loading 18 tons of refuse consumes 31 minutes.

A tractor driver then hitches his vehicle to the trailer for the 33-minute trip to the landfill. Unloading through the 94-inch square rear opening requires another 11 minutes. An auxiliary, trailer-mounted 30-hp, air-cooled Wisconsin engine supplies power to a winch which pulls the steel bulkhead to the rear of the trailer, thereby forcing the refuse out the rear door. Observers compare the appearance of the unloaded refuse to that of baled hay, which illustrates the compaction obtained.

The deadhead run back to the station requires 21 minutes, thereby totalling 96 minutes for one entire cycle. Because of the time requirements, two tractors adequately handle the three trailers. When a trailer completes the loading cycle, a tractor pulls it out of the pit and spots an empty trailer before hauling the newly-filled one to the landfill. By the time the second trailer is full, the second tractor has returned from the landfill, hauling the third empty trailer, which he spots in position before taking trailer No. 2 to unload. Two tractors, however, provide us with no factor of safety for breakdowns and repairs. We therefore intend to purchase another before the end of the year.

Two refuse collections per residence per week require six days operation of the refuse station each week. Each day we deliver 180 tons of refuse to the landfill, the result of ten trailer trips. The extra tractor we intend to buy will provide an increased capacity of about 10% for the future by eliminating the lost time jockeying trailers at the station. The operation of this third tractor will not materially increase the cost. Our residents will still enjoy more convenient refuse collection at a savings of $5,000 per month. ◄◄

The new 750-car municipal garage extends three stories below grade and is topped by a municipal park.

Engineered Lighting For a 750-Car Parking Garage

New York City custom-engineers its luminaires to light the new Brooklyn Civic Center garage

Engineering studies concerning the lighting of New York City's first municipal parking garage, at the Brooklyn Civic Center, indicated that fluorescent lighting tubes should be enclosed to prevent pilferage, to guard against breakage by automobile aerials, and to prevent dust from collecting on the tubes. Dusty tubes would impair light output and necessitate periodic cleaning.

Accordingly, a special fixture and lens combination was jointly engineered by the McPhilben Manufacturing Co., Inc., Brooklyn, N. Y., and the Holophane Co., New York, N. Y. The longitudinal fixtures (McPhilben) are designed for tubes four feet long, and come in four-foot and eight-foot lengths. The lenses (Holophane) were designed in two-foot lengths to fit the modular pattern and to permit economic production with standard molding facilities. The lenses not only satisfy the objectives established by the engineering studies, but also improve light output. They actually produce a higher lighting level than would be achieved with the bare tubes. Light which otherwise would be directed upward or at non-useful angles, is directed downward into the space to be lighted, thereby adding to the light.

In planning the arrangement of lighting fixtures, the designers recognized the need for four different

The garage interior has five lighting patterns and lighting intensities that vary from 3 to 55 foot-candles.

illumination levels: (1) a high-level area at the garage entrance, (2) a transition area between entrance and main parking area, (3) aisle areas, and (4) parking areas.

The entrance way has five parallel rows of lights, each 40 feet long, spaced on 4.75-foot centers. The lighting level in this area is 55 foot-candles, the highest in the garage. A higher lighting level is desirable at this location to accustom the daytime parker to indoor illumination.

The transition area has three rows of lights each 56 feet long on 9.5-foot centers, and provides approximately 30 foot-candles.

Aisles are lighted by two rows of eight-foot interspaced lights, one on each side of the aisle. These units are on 14-foot centers in the longitudinal direction and on 15-foot centers in the transverse direction. Lights are equipped with two 40-watt rapid-start tubes in tandem. Lighting level is 5 foot-candles.

Parking areas are lighted with units eight feet long on 14-foot centers longitudinally and on 20-foot centers in the transverse direction. Lighting level is 3 foot-candles.

The Holophane lenses direct the light so that planes perpendicular to the fluorescent tubes resemble the cross section of an inverted bowl. This pattern gives near-uniform illumination at floor and eye level, a condition which would probably not prevail with present spacing if the more conventional pear-shaped or triangular cross-sectional patterns were used. Spaces between patterns above floor level would tend to be darker than at lower levels where the patterns would overlap. The newly designed lenses overlap the patterns almost to the ceilings and provide more uniform light.

Lens Design

The lenses are in the form of troughs with flat bottoms and curved sides. The sides first follow a slightly concaved form, then make a gradual transition into a convex form, and terminate in lips at the upper edges. The lenses are of crystal glass and have hundreds of four-sided pyramids cast in their surfaces. These pyramids are precise optical prisms and break up light from the tubes into a myriad of overlapping cones and direct it downward in the desired pattern. The bottom and concave sections of the lenses have the prisms on the outer surfaces; the convex sections have them on the inside. The shape of the lens and the prismatic configurations were, of course, determined by laboratory and engineering investigations.

The lenses fit into hinged door frames and are completely gasketed. The door frame can hinge from either side and is secured by a locking thumb screw. The frames have lens-supporting mullions at two-foot intervals and end plates at each end, and are gasketed in all three places. The gasketing between the frame and the lens makes the fixture reasonably dust-tight.

Fixture construction is of 18-gauge zinc-clad steel with a protective undercoat of zinc-chromate and baked aluminum enamel finish.

Fixtures are bolted directly to the outlet boxes and inserts in the concrete ceiling.

The new garage, New York's first municipal garage, opened early in 1960 and has been acclaimed an outstanding success. It has a capacity of 750 cars, extends three stories below grade, has a city park on the roof and services a complex of multi-story municipal buildings.

Rates are 25 cents an hour. The first five months of operation brought in between $40,000 and $50,000 and nearly 84,000 cars used the facility. Average parking time is about four hours, according to the Traffic Department. Plans are under way for additional municipal garages.

Design and construction were supervised by the New York City Department of Public Works. James R. Fraser of New York City was the consulting engineer. ◄◄

Everything had to go—down to the bare ground—before Abilene could start to rebuild its worn out and broken downtown street network.

New Streets

. . . spark urban revival in Abilene, Texas

By **HENRY B. NABERS***

A city is no better than its downtown—and downtown Abilene, Texas, was one of the worst in terms of congestion, poor drainage, inconvenience and "the shop-worn look."

But that was all of a year before a $2,000,000 drainage and street improvement program ripped the last trace of tired pavement, 20-inch curbing and deep gutters from 42 blocks of the city's business district.

A heart operation is tricky business, but surgeons insist that the result is usually worth the risk. Without it, the patient dies; with it, continued health and increased productivity are almost assured.

Citizen Support

So it was with the heart of Abilene. Without the ripping and tearing, without the mud and dust of demolition, there could have been no rebuilding. It is certain that, without the operation, the "patient" would have died. Residents of the city were so sure of it that they went to the polls and voted $1,300,000 in general-obligation bonds for renovation of downtown Abilene—the balance of the cost will come from private sources and assessments ($16 per front foot) to the property owners benefitted.

Abileneans carried their support far beyond bond approval. They continued to patronize downtown stores, even when they had to dodge street-building equipment and hurdle dirt piles and business actually showed a 15% increase during the seven months of ordered chaos in the city's downtown streets. They turned vexing incidents into comic episodes.

Their interest in, persistent support of, and encouragement to embattled merchants resulted in voluntary alteration and modernization of many establishments in keeping with the glamorized district. Real-estate values already have risen and a recent general increase in store vacancies has been effectively checked.

Abilene banks have offered long-term remodeling loans at special interest rates to building owners. Citizen committees, led by Central Abilene, Inc., an organization of business men, pushed the street program to begin with, then stayed solidly behind it, promoting it at every opportunity. E. B. Yeatts, consulting engineer of Abilene, provided preliminary engineering without fee, even before the city decided to proceed. Now he is the consulting engineer for the program. Storefront redesign drawings for businesses along five downtown blocks were offered as a public service by architect Peter Olds. Three other local architects, William M. Collier, David S. Castle and Charles L. Landers, prepared sketches of a proposed civic center—at their own expense.

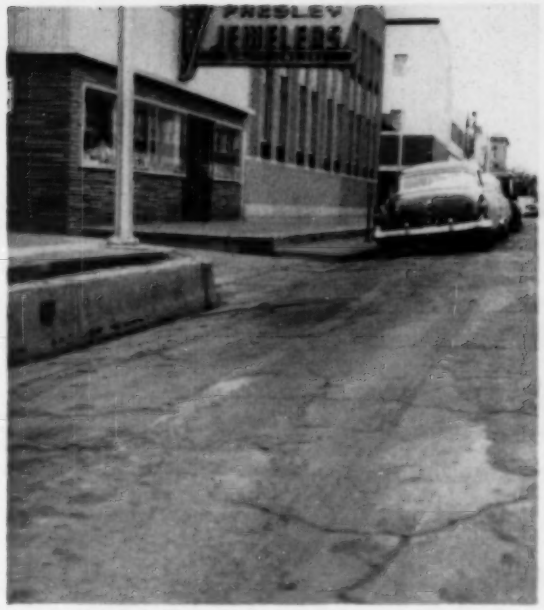
The Whys

Until the current program, no tax money was spent to improve downtown Abilene in more than 40 years. Established in 1881 by the Texas and Pacific Railhead and by cattlemen who conducted its principal business, the railroad town grew to the north and south of the railroad. For a few years, cattle, wool and buffalo bones were the only products of the area, and the railroad was the artery that bound it together. But with agricultural growth, subsequent discovery of oil and development of a thriving industry (there are 300 oil companies represented in Abilene today), the railroad became a trade barrier, chopping the town into two separate business areas.

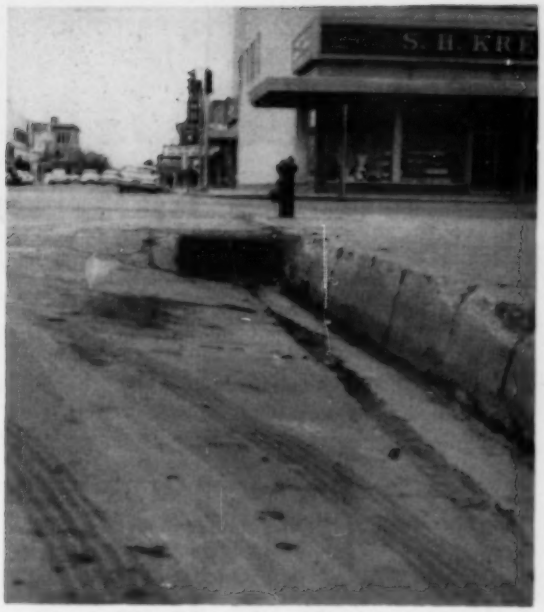
As the city grew—it tripled in population between 1940 and the present—lack of communication and transportation between the north and south sections took increasing

---

* Soon after the completion of the project which Mr. Nabers describes in this article, the author resigned as city manager of Abilene to become the city manager of Spokane, Wash.



Curbs were designed for buckboards, surreys and coaches, eliminating the long step down. Underdrains were the only drainage structures in the area.



Cracked, sprawling pavements bothered drivers and pedestrians alike, and tradesmen were among the first to get behind the renovation.

toll of downtown commercial activity. Cracked and battered pavements, curbs that were designed for buckboards and carriages, and the absence of effective storm drainage repelled rather than attracted the city's 75,000 residents.

Conditions grew so bad that *Life* Magazine, in 1945, predicted that Abilene, before its time, would become a ghost town.

Something had to be done, and the present paving, widening, under-pass, drainage and utility program represents only the first stage of the city's revival activities.

With a construction start in March, 1959, the Texas Bitulithic Company moved in and began breaking pavement with a drop hammer and an International TD-18 dozer with ripper. All material, except a narrow strip of sidewalk next to buildings, was loaded by Michigan and Allis-Chalmers HD 20 front-end loaders.

Storm Sewers

The storm-sewer system—there never had been one—forced the removal and replacement of all utilities in order to install reinforced concrete pipe which would be large enough to provide drainage for a 25-year storm.

The layout called for widening two avenues to 70 feet and expanding the width of the other to 57 feet. Sidewalks range in width from 11½ to 14½ feet.

The standard procedure for street construction involved:

1) The stabilization of mild clay subgrade with lime (100,000 square yard using 3% lime by weight), mixed with a disk harrow. Lime slurry was applied by water truck, provided with a pressure pump to keep the liquid agitated. A six-inch penetration was achieved with a slurry. Following the disk plow was a Seaman Pulvi-Mixer, to complete the blend, and a sheepsfoot roller.

2) A six-inch (compacted) sub-base was then laid, using gravel plant waste, pug-mill mixed with 5½% high-early types cement. The granular mix, compacted with a 25-ton pneumatic roller, was then shot with a course of RC-2 asphalt-water emulsion to retain the water in the sub-base and cure the sub-base.

3) Four days after the sub-base was placed, a surface of six-inch, non-reinforced portland-cement concrete was cast. Transverse contraction joints were sawed on 15-foot centers as soon as the concrete had set. Curbs and gutters were included in the monolithic pour.

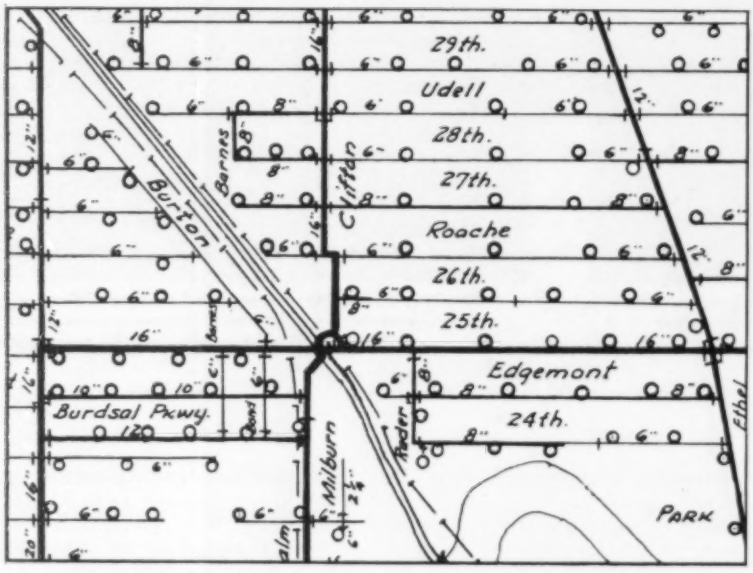
Bordering the white pavement, concrete sidewalks were treated with 2¼ pounds of silicon carbide and three pounds of black magnetic oxide per square yard, then troweled, to provide safe footing, durability and a dark, glareless surface.

Prior to the street reconstruction, only two narrow underpasses linked the north and south downtown districts, divided by the Texas and Pacific railroad tracks, and U. S. Highway 80. Three years ago an underpass plan prepared for the city carried a $500,000 price tag. It was dropped because of high cost. Then John Alexander, of the city's engineering department, designed an underpass that would cost a good deal less than the original. He subsequently designed two others and is now supervising engineering on the construction of all three. With simple design, efficiency and competitive bidding, the city will have three new underpasses for a little more than the $500,000 originally estimated for one. Also, a $325,000 cloverleaf traffic interchange, which will undercut both the railroad, the highway, and two bridges —financed by the state and the T & P Railroad—will complete the link.

With Stage I of the Abilene program completed, the city is now concentrating on improving its water supply and construction of a new civic center. A potential ghost town has come to life—and even with completion of only part of the planned facilities, Abilene is once again the "Key to West Texas." ◄◄

A water-utility engineer provides tips for developing . . .

Good Records for Distribution Systems



The small-scale map of the basic system indicates street names, main sizes and the general locations of valves and hydrants.

By **M. C. STOUT***
Indianapolis, Ind.

Distribution system records can be simple but complete. Well-planned forms and step-by-step procedures are necessary to build and maintain an adequate record system.

Proper engineering, careful construction and adequate inspection do not form a complete unit in themselves. "As-built" drawings, showing corrections made during construction, are an essential step in the making and keeping of good records. Even in the smallest systems, the fallacy of the superintendent or foreman trying to keep the information on scraps of paper or even in his head is a thing of the past. Everyone now recognizes that scraps of paper become lost and supervisors take vacations or move away. Standardized records that others can interpretate must be available in a convenient location for emergency as well as for ordinary maintenance purposes.

Records cluttered with too much information are almost as bad as those with inadequate data. Leaving out unessential features avoids unnecessary labor and makes the system more understandable for the user. Experience dictates what information is necessary for the proper operation, maintenance, design, planning and extensions of a particular system.

Essential Features

Certain features form an essential part of all systems; others depend on the size of the utility. A large utility will require more maps to make the transition from the small-scale basic map to the large-scale detail drawings. The larger utilities must take more care to avoid intricacy in their cross-referencing system than must the smaller ones.

Good record systems always contain the following features:

- **Basic information that flows freely from the field to the drafting board.**
- **Recorders who will not easily forget or overlook any step in the process.**
- **A second party who always checks the recorder's work.**

Making and keeping records on a systematic schedule rather than on a "hit and miss" basis insures their availability. A posted outline will remove the memory factor from the system.

Map Details

The basic system map consists of the distribution system superimposed on a city map of convenient size. Most cities have suitable maps available. Those that have none can use county plats or United States Geological Survey quadrangle maps. In some cases it may be necessary to engage a consultant to prepare one. If existing maps are not of a suitable scale, it would be cheaper for a commercial photostat house to reduce or enlarge the drawing than it would for a draftsman to redraw it to a more convenient size.

With the map available, the second step consists of adding the distribution system to it. It may be possible to show most or all details on just one map in smaller cities where the scale does not exceed 300 feet to the inch. Smaller-scale maps for larger cities will limit the information to that of only essential priority. In these cases sectional city maps can indicate other details.

The Indianapolis Water Company's 1,000-foot-scale map shows only street names, main sizes, valves, hydrants and terrain features. Property lines and lot lines do not appear. Its purpose is to give the user an overall view of the distribution system.

Sectional maps to a scale of 1 inch : 200 feet provide the next step in the Indianapolis system. Smaller cities may be able to impose their entire system on a map of this nature. This map indicates main

* Mr. Stout is Principal Assistant Engineer for the Indianapolis Water Company. The material presented here formed the basis of a paper that he recently delivered before the Indiana section of AWWA.

sizes, property lines, the distance from the main to property line, valves and hydrants in their approximate location and other details. This map also shows the streets where mains do not exist, which the 1,000-foot-scale map does not do. A section number, corresponding to a blocked-out area on the basic map provides ready reference from one map to another or to adjacent sections. Assigned hydrant and intersection numbers also appear on this map.

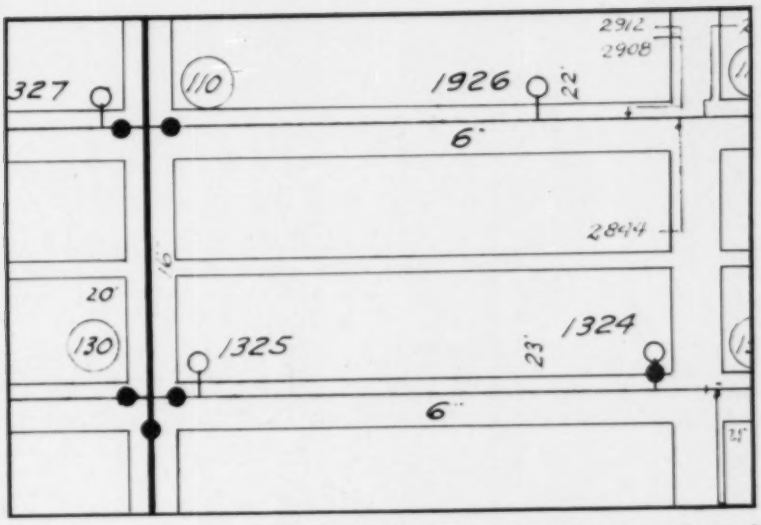
Drafting symbols indicate valves and hydrants. The width of the line which designates the main is in approximate ratio to the diameter of the pipe.

Intersection cards furnish the third step. These consist of a drawing of one intersection to a scale of 1 inch to 30 feet. The intersection number corresponds to that shown on the preceding map. The card provides all detailed dimensions necessary to locate the mains, hydrants and valves as well as the installation dates. Field personnel can easily carry prints of these cards for ready reference on the job.

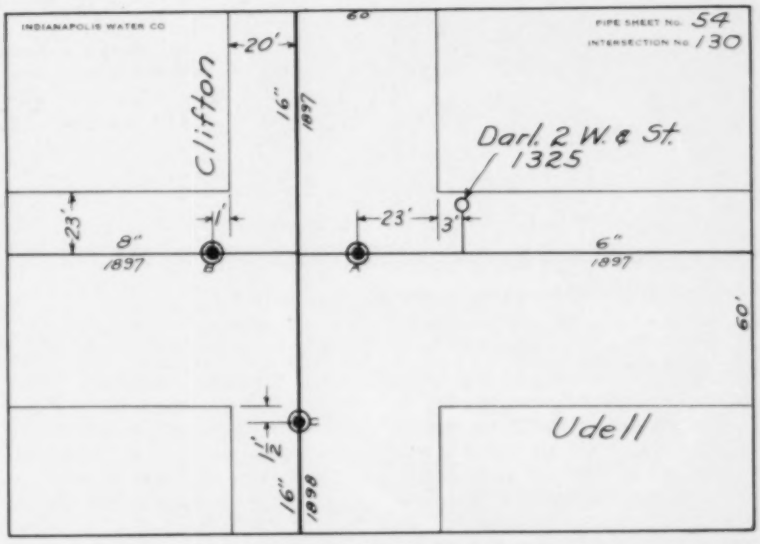
Valves

Each valve in the system has a corresponding valve-record card. This card indicates the valve number, size, location, make, date of installation, type of box, measurements and repair records. The opposite side provides columns for testing dates, number of turns and remarks concerning the general operating condition.

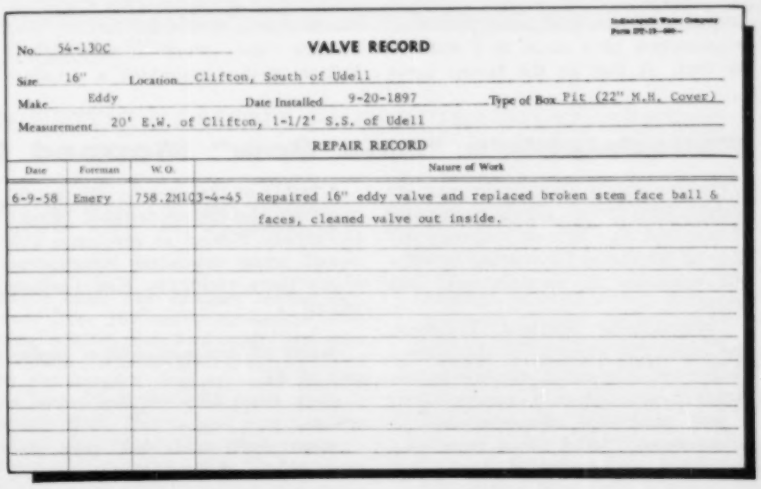
Similar hydrant cards supply the same type of information and also include the painting record and hydrant number. Each new hydrant installed receives a number which appears in the upper right corner of the hydrant card, on the 200-foot scale-maps, and on the instruction



The 200-foot-scale map indicates intersection and hydrant numbers as well as other details.



Intersection drawings provide complete measurements.



Indianapolis Water Company
Form DW-19-600

No. 54-130C **VALVE RECORD**

Size 16" Location Clifton, South of Udell

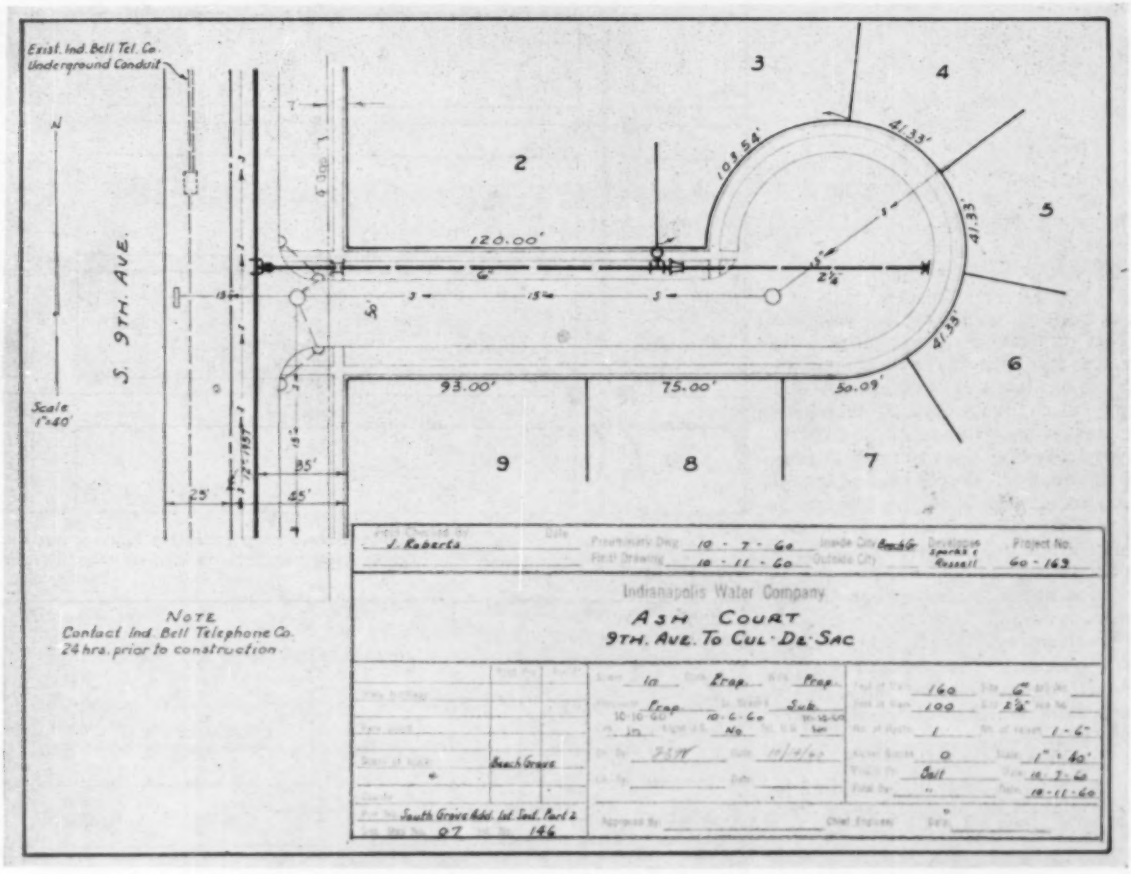
Make Eddy Date Installed 9-20-1897 Type of Box Pit (22" M.H. Cover)

Measurement 20' E.W. of Clifton, 1-1/2' S.S. of Udell

REPAIR RECORD

Date	Foreman	W.O.	Nature of Work
6-9-58	Emery	758.2M10	3-4-45 Repaired 16" eddy valve and replaced broken stem face ball & faces, cleaned valve out inside.

The reverse of the valve-record card provides the test-record data.



Construction drawings become part of the record system.

cards. A consecutively-numbered book supplements these records.

The record system may include engineering drawings of the new construction, showing any corrections or changes made in the field. Sketches are not satisfactory for permanent records. The engineering drawings indicate the proposed watermain, other utilities, property and street lines, and other pertinent information to a scale of 1 inch to 40 feet. A box in the lower right corner furnishes quantities, dates and names. Only the detailed valve, hydrant and intersection information need supplement the "as-built" drawing for a complete record.

Other Systems

Other systems may use cards filled out by the construction inspectors in lieu of engineering drawings. These cards describe rather than picture the work accomplished. Either method provides a satisfactory system if the necessary information finds its way to the record books.

Because each system has its own little idiosyncrasies, records vary from place to place. In addition, some superintendents require records to perform different tasks than others. Organizing or reorganizing a record system may be tedious, time-consuming and difficult, but future benefits will make a good job a profitable one. ◄◄

Philadelphia's "Skid Row" Mapped for Clean-Up

Philadelphia's Tenderloin and its some 3,000 who either can't or choose not to work are costing the City of Brotherly Love some $4,000,000 annually in services and lost trade.

Consequently Francis Lammer, the executive director of the Redevelopment Authority, expects to relocate these down-and-outers within a year, and take adequate steps to prevent such skid rows from developing elsewhere in the city.

A study of the area by six faculty members and 200 students of Temple University School of Medicine disclosed some revealing information about these residents. Key findings were:

nearly all are men, with a median age of 52.

more than 83% of the group is white.

about half said that they had earned less than $1,000 in 1959.

almost half of the men have never married.

about 40% are problem drinkers.

27% are aged.

13% are physically aged and mentally ill.

13% are chronically ill.

9% are criminals.

The Greater Philadelphia Movement initiated the study and made the report to the Philadelphia Redevelopment Authority. ◄◄

One of Southern California's largest home developments, Eastgate, assures low-cost, efficient water service for its 2250 homeowners with "K&M" Asbestos-Cement Pressure Pipe.

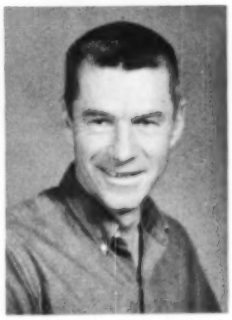
22 MILES OF "K&M" ASBESTOS-CEMENT PRESSURE PIPE ASSURE

dependable water service for a spanking new city of 10,000!

Modern cities like Eastgate spring full-grown from the earth—complete with homes, schools, shopping center and even a hospital. To make such a city a reality calls for modern methods and modern materials, such as "K&M" Asbestos-Cement Pressure Pipe. This rugged pipe was the builder's choice for its freedom from maintenance and for its durability. He knows today's particular home buyers demand materials that function without failure for years and years. Another important factor was the ease of installation and handling "K&M" Asbestos-Cement Pressure Pipe offers. Robert Kennedy, of Kennedy Pipe & Supply Company, tells you, in his own words, how "K&M" Asbestos-Cement Pressure Pipe helped him adhere to a tight schedule.

"THE 'K&M' FLUID-TITE® COUPLING HELPED US LAY MORE PIPE PER HOUR!"

"We had no trouble keeping up with the builder's tight schedule with 'K&M' Asbestos-Cement Pressure Pipe and the 'K&M' FLUID-TITE Coupling. All we had to do was lubricate the pipe end, and slide it into the coupling. This gave us a joint tight under all operating conditions. We didn't need any heavy machinery or coupling pullers. 'K&M' Pipe was lightweight and easy to handle, which permitted us to work smoothly. It reduced our installation time and costs considerably."



Robert Kennedy, President, Kennedy Pipe & Supply Company, Paramount, Calif.

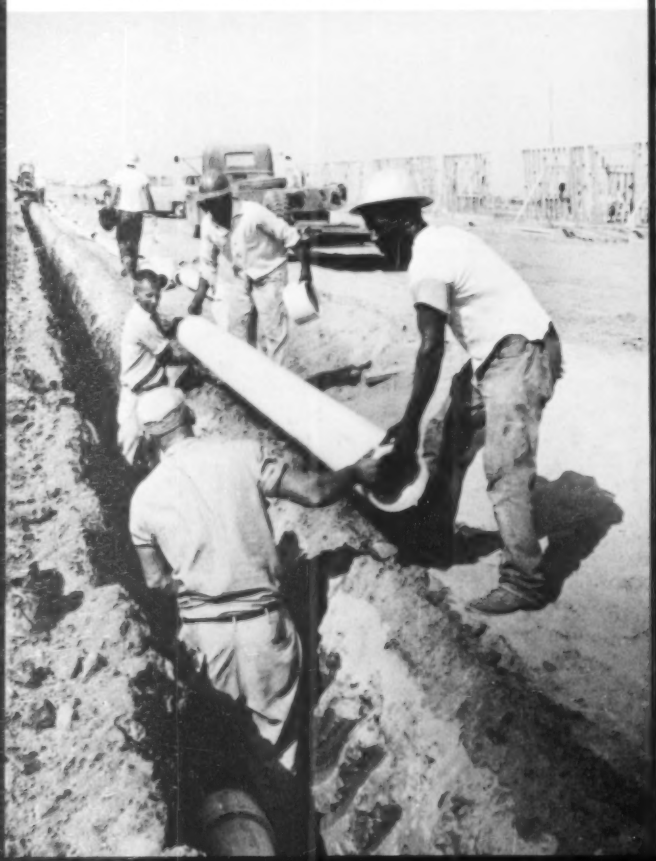
After it's in the ground, "K&M" Asbestos-Cement Pressure Pipe is practically indestructible. It won't tuberculate. This assures the taxpayer of the same water flow and pressure years later, that he had when his home was new. Pumping costs remain low. Joints stay watertight. In addition, this pipe resists corrosion, and is immune to electrolysis.

For more information write to: Keasbey & Mattison Co., Ambler, Pa.

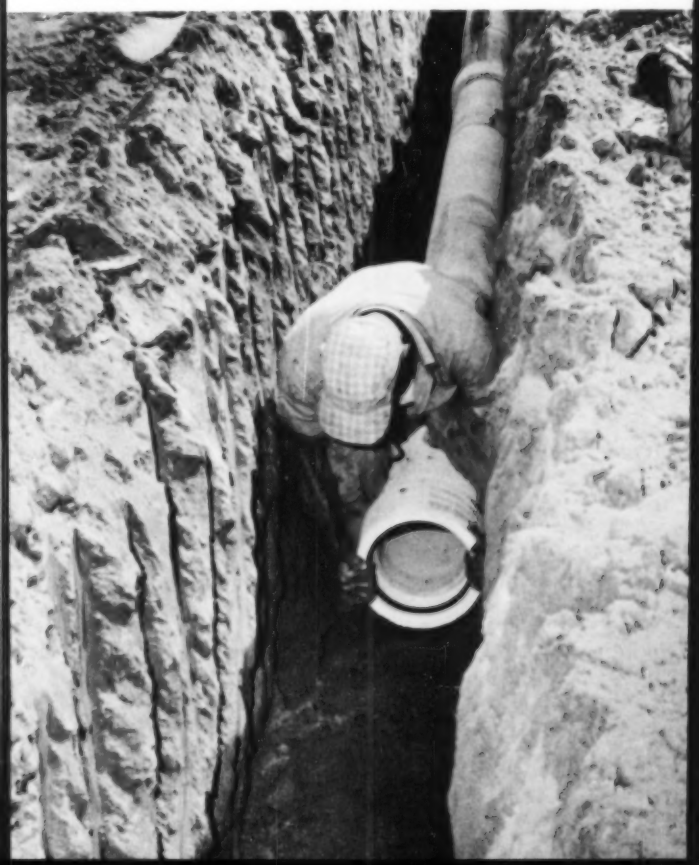
K·M BEST IN ASBESTOS

Keasbey & Mattison at Ambler

The light weight of "K&M"® Asbestos-Cement Pressure Pipe permits you to lay most sizes by hand . . . and reduces shipping costs.

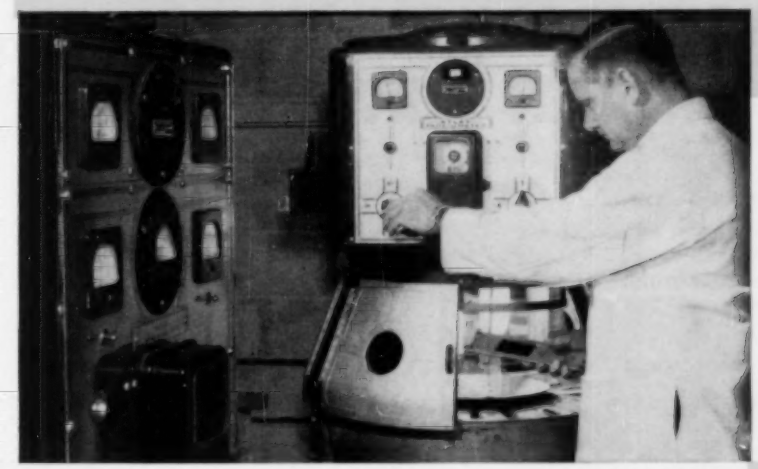


Assembling the exclusive, patented "K&M" FLUID-TITE® Coupling and Pipe takes but an instant.



Stormcote®

maintenance program proves . . . FLEX-O-LITE Best...

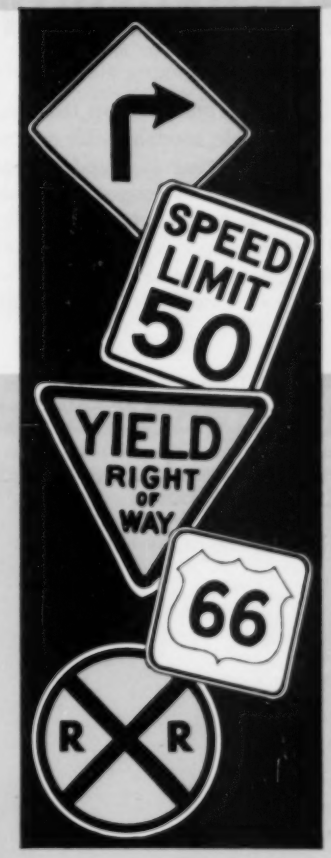


Weatherometer and Fadometer tests demonstrate Extra Life and Reflectivity of FLEX-O-LITE SYSTEM

"Permanized" with amazing new STORMCOTE® protective coating, FLEX-O-LITE Reflectorized Signs reveal a life expectancy of five or more years with effective day and night brilliance and reflectivity under varying weather conditions, confirmed in authenticated weatherometer and fadometer tests (note illustration).

STORMCOTE® adds years of useful service to the normal life expectancy of signs . . . assures maximum weather, water, dirt, and wear resistance for greater economy and satisfaction, particularly when FLEX-O-LITE materials and our recommended processing system are employed.

Isn't this the kind of economical performance, safety factors and long life you want in your reflective traffic signs and markings? Wire, write or phone for complete details.



FLEX-O-LITE PRODUCTS

- **#831 LEAD-FREE High Index of Refraction Beads.**
- **UB 68 LEAD-FREE Medium Index of Refraction Beads and Sign Kits.**
- **Type H Safety Spheres with ultra-high brilliance.**
- **Traffic Beads — Free-flowing, Moisture-Proof and Standard.**
- **All-Weather Airport Runway Beads.**
- **Sign Bead Dispensers — Automatic and Semi-Automatic types.**
- **Traffic Bead Dispensers.**

FLEX-O-LITE MANUFACTURING CORP.

8301 FLEX-O-LITE DRIVE, ST. LOUIS 23, MO. • PARIS, TEXAS
FLEX-O-LITE OF CAN., LTD., P. O. BOX 216, ST. THOMAS, ONTARIO, CAN.

MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH AND MEDIUM INDEX SIGN BEADS

The newest reason to make your next truck a FORD:

'61 FORD TILT CAB TANDEMS

FOR BETTER MANEUVERABILITY...INCREASED LOAD CAPACITY...GREATER SERVICING EASE!

Ford Tilt Cab Tandems can turn in a smaller circle than comparable models with conventional cab design. Power steering is standard to facilitate tight turns into alleys and congested areas. Set-back front axles carry a greater percentage of gross vehicle weight for increased payloads. Wide choice of engines, transmissions and rear axles lets you tailor these trucks to your exact job requirements.

Ford's tilt cabs permit quick access to the engine for lower-cost maintenance. Electrical circuit "printed" on back of instrument cluster eliminates the usual tangle of wires. Quick-disconnect, multiple-contact plugs in the wiring harness replace numerous individual connections to speed servicing and prevent errors. Ask your Ford Dealer for more information on these trucks designed especially for municipal work.

Ford CT-Series Trucks. Now, the handling and servicing ease of modern tilt-cab design, plus the payload capacity of tandem-axle construction, in four factory-built Tilt Cab Tandem Series. These high-capacity models are available on a special order basis with GVW's from 35,000 lb. to 51,000 lb., and GCW ratings up to 75,000 lb.

SEVEN MORE REASONS WHY IT'S GOOD BUSINESS TO DO BUSINESS WITH FORD!

You save from the start with Ford's traditionally low prices, and your savings continue with low operating and maintenance costs. These facts are documented by certified test reports from America's foremost independent automotive research firm. Ask to see these reports. They're on file at your Ford Dealer's.

In addition to these dollar-and-cents savings, the following bonus benefits are yours with Ford Trucks:

1. **Rigid quality controls** give you the strongest safeguard of truck reliability ever. Modern, *exclusive-truck* manufacturing facilities, with emphasis on quality every step of the way, are designed to give you a Ford Truck that is as free from defects as a truck can be. Tangible results of these high standards are Ford's new warranties.

2. **Exclusive 100,000-mile warranty** (or 24 months) on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. The warranty covers full cost of replacement parts . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

3. **12,000-mile warranty** (or 12 months) on all 1961 Ford Trucks of every size is further evidence of the confidence Ford has in its quality controls. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.

4. **Special fleet financing** can be arranged by your Ford Dealer. It's available for owners of two or more trucks, and provides the opportunity to precisely tailor payments to your income patterns or depreciation schedules. This fleet-fitted financing offers substantial savings and frees your working capital.

5. **Sales engineers and service specialists** in 36 district offices are on call to solve special truck problems. Working with both dealers and customers, these experienced truck men represent another extra step Ford takes to provide your continued satisfaction.

6. **Replacement parts depots** at 26 strategic locations across the country quickly supply needed parts from ample stocks. Ford's entire supply system is geared to give you faster service and reduce costly downtime . . . *wherever* you are.

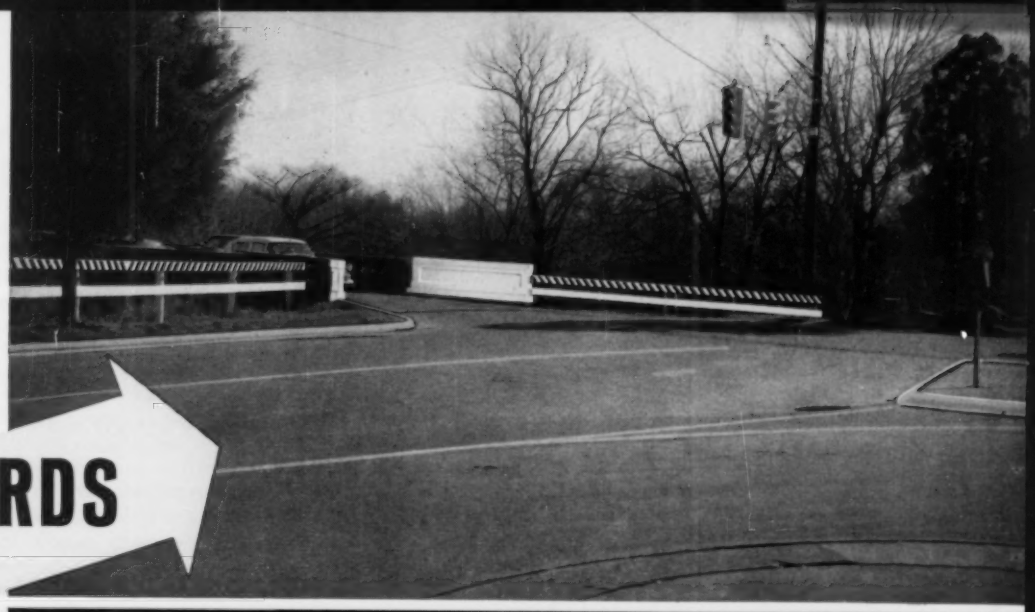
7. **6,800 Ford Dealers,** including 280 specialized Heavy Duty truck dealers, can keep your trucks ready to go wherever they go. From coast to coast, fast Ford service—gas *and* Diesel—is always close at hand.

From Super Economy pickups to Diesel-powered tractors, you can now fill every truck need up to 76,800 pounds GCW with a modern, money-saving Ford Truck.

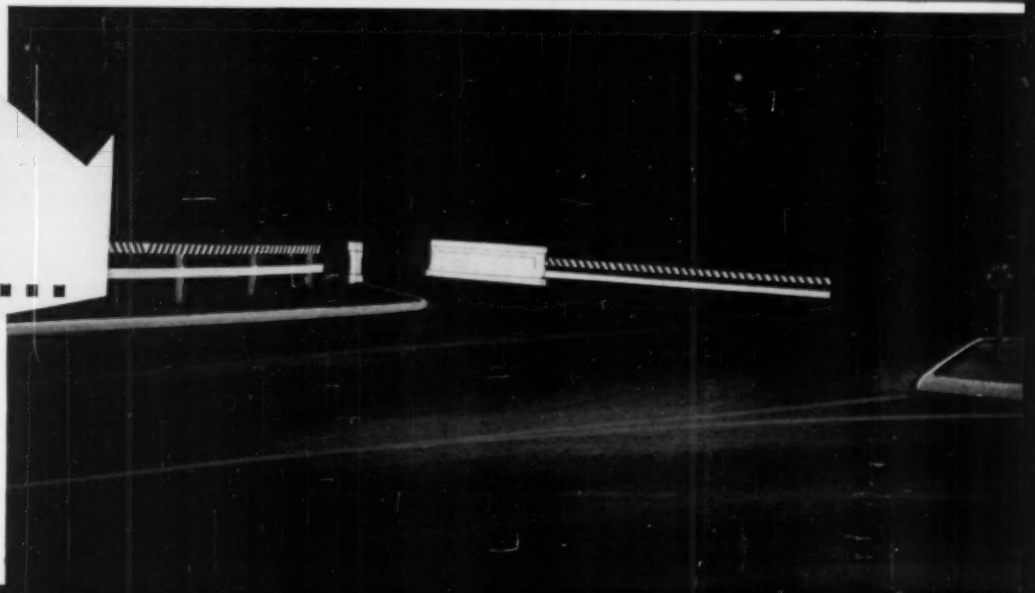
Quality-Built...Maintenance-Engineered

FORD TRUCKS COST LESS

FORD DIVISION, *Ford Motor Company*



THESE HAZARDS CAN'T HIDE IN THE DARK...



they're reflectorized with CATAPHOTE V-S-R

Approach this Jackson, Mississippi intersection in daylight or darkness . . . you're instantly aware of the sharp delineation of curbs and traffic islands . . . barrier boards and bridge abutments. Bright by day . . . brilliant by night . . . these traffic hazards are *reflectorized* with Cataphote V-S-R . . . Vertical Surface Reflectorization.

Available in kit form, Cataphote V-S-R consists of specially formulated bead binder (white or yellow), automatic air operated applicator and Cataphote "101" extra high intensity glass spheres. Easily applied, V-S-R is one of the greatest aids you can provide the motoring public.

Men who lead the way in traffic control have been quick to recognize the safety values of Cataphote V-S-R . . . and use it extensively. V-S-R can help you be a pace setter, too. For more information, write for Catalog V-160.

CATAPHOTE CORPORATION

TOLEDO 10, OHIO / JACKSON, MISSISSIPPI

In Canada: CATAPHOTE/CANADA LTD. • P.O. Box 727 • Brantford, Ontario

MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

A bright fluorescent orange sign erected by the Indianapolis Bureau of Traffic Engineering working with a special unit assigned to school traffic problems.

Special Attention to School Safety

By STANLEY T. SIEGEL
Director of Traffic Engineering
Indianapolis, Ind.

More than 107,000 pupils, who attend 129 educational institutions in the City of Indianapolis, are now protected by 480 fluorescent orange school-zone signs and a 25-mile speed limit while children are present. This is the five-point program conducted by the Bureau of Traffic Engineering, based on:

1. A study of speed, school routes, parking restrictions and crosswalks;

2. A test on motorists of fluorescent orange school zone signs;

3. A "School Coordinating Committee" to act as a clearing house for school requests, complaints and suggestions;

4. A book of school-district maps containing descriptions of all traffic safety controls within a four-block area of each school building; and

5. Review and renewal of all traffic controls each spring and fall.

Following the first study of speed, school routes, and crosswalks, made in the fall of 1959, the new fluorescent orange school-zone signs were erected in April 1960 at several school locations. Over a one-month period average speeds dropped from 36.5 mph to 31.5 mph at St. Catherine's School and from 32.5 mph to 30 mph at School 49.

These signs were allowed to remain all summer, since each of the schools had sizable summer-school enrollments. It was concluded that the signs were at least 70% effective and a report was made recommending that such signs be used throughout the city. The recommendations were endorsed by the mayor's traffic-improvement committee, the school coordinating committee, the mayor's safety-coordinating committee, the Indianapolis Safety Council and all three newspapers. As a result, the Board of Public Safety and the City Council approved the following regulations:

- **A school zone was defined as that portion of a street contiguous to any educational institution and extending for a distance of 300 feet in each direction;**
- **A speed of 25 miles per hour was established from 30 minutes before regular school hours to 30 minutes after, on school days;**
- **The Board of Public Safety, using engineering studies, may recommend changes in speed limits, up or down;**

(Continued on page 139)

The author (right) discusses a school-system map with A. G. Wake, traffic design and planning engineer of the Bureau.

Parlon®-based Traffic Paints Dry Fastest, Wear Best

From California to New Jersey, from Canada to the Gulf, state, county, city, and town specifications call for Parlon® chlorinated rubber in their traffic paints. *Here's why:*

1. Properly formulated Parlon-based traffic paints dry faster than any others (6-10 minutes is average specification performance). This means fast-dry on the road surface. The over-eager motorist has the *least* possible chance to smear and deface the bright new markings.

2. Parlon-based traffic paints will last as long as any other paint—no matter how expensive—yet cost only pennies more than the cheapest paint you can buy.

Want proof that these superlatives are true? Ask your regular supplier about Parlon—put out bids calling for performance-proved standards—or write us asking to see the wealth of comparative data which has been collected during the past four years of road testing.

The motion picture, "Highway Life Lines," tells the story of what a good traffic paint should be and do to help make our highways safer and easier to use. Arrange for a print through one of our district offices or from Wilmington.

Parlon® chlorinated rubber is a product of

HERCULES POWDER COMPANY
INCORPORATED

Hercules Tower, 910 Market Street, Wilmington 99, Delaware

SALES OFFICES: BOSTON, CHICAGO, CINCINNATI, CLEVELAND, DETROIT, HOUSTON, LOS ANGELES, NEW YORK, ST. LOUIS, SAN FRANCISCO, WILMINGTON

CR61-6

(Continued from page 137)

- **Regulation is effective upon the erection of adequate signs marking the beginning and end of each zone;**
- **Signs are to be fluorescent orange, with the legend "SCHOOL—SPEED 25 WHEN CHILDREN ARE PRESENT."**

During the trial period, there was a great deal of favorable comment and no complaints. When the ordinance and policies described above were approved, 480 new sign installations were made in three weeks.

These installations consist of two signs mounted on channel posts or telephone and light posts, with the top ten feet above ground level. One sign is a standard 24-x-24-inch diamond shape, with the word "SCHOOL." The other is an 18-x-24-inch speed sign, mounted to overlap the bottom point of the "SCHOOL" sign. Both are surfaced with Scotchcal brand fluorescent orange film, silk-screened and bonded to aluminum backs in the city's sign shop.

Visual impact of the orange color is the primary advantage. In addition, fluorescence makes school zone signs distinctive from others, and it applies only during daylight hours, when it should. Obviously, school signs should not be reflective at night.

The School Coordinating Committee, formed several years ago, was reactivated with representatives of the public and parochial school systems, the Police Department, the Parent-Teacher Association and the Bureau of Traffic Engineering.

The book of maps was drawn up following field investigations and conferences with the principals of each school. It serves as a handy sign log. With it, the traffic-control situation near a given institution can be determined at a glance.

This book is brought up to date each spring and fall by field check. Following this check, 1,500 to 1,800 crosswalks are repainted and any other sign or paint work required is completed. More than half of the signs remain all year because of extensive summer school activities. ◄◄

Parking a World-Wide Problem

Increasing automobile registrations in urban centers of many lands have created parking and traffic problems abroad. The problems are much the same in the various cities but the citizens are different as to discipline and compliance with new regulations. Traffic signals, walk and wait signs, pavement markings and parking meters may not accomplish their purpose as readily in some areas, if at all, as they do in this country where the public knows their values. Numerous programs have been abandoned with little or no success. Enforcement is often lax or nil.

These are observations of Harold P. Hallock, president of Minit Park Garage Co., 420 Lexington Ave., New York 17, following a 20,000-mile trek through Africa and Europe. In the City of Johannesburg in the Union of South Africa he examined the feasibility of a 400-car Minit Park ten-level garage combining a terrace restaurant. Johannesburg is a burgeoning city of several hundred thousand and two years ago called in Lloyd Reid, former New York City traffic commissioner, to develop remedial and preventative plans for the inevitable onslaught of traffic.

In Italy, Mr. Hallock said action will only come as the congestion problem becomes intolerable, which it certainly will with the present few restrictions and little enforcement. Parking deputies check cars in certain streets and even the parks and collect fees on a random basis which could be better done with parking meters. There are only a handful of garages in all Italy. Beautiful new buildings are rising with little or no off-street facilities. Car registrations are soaring with industrial gains in a strong, healthy economy. These temperamental people do not yet realize that pay-parking is imperative if the facilities are to be provided for them and for their own municipalities' welfare.

Selection of Sites Difficult

England, France and Germany are beginning to attack their problems seriously but the cities, by their nature, make the selection of key sites difficult. Numerous small off-street facilities, lots and garages, seem indicated.

There is no such thing as "free" parking. The cost is loaded in somewhere to someone and it is the motorist who should pay. ◄◄

Compact Repair Cart

A three-wheel utility vehicle manufactured by Cushman Motors, Lincoln, Neb., has been made into a parking-meter repair cart by the city of Vancouver, Wash., maintenance department. One side has a rack for spare meter mechanisms. The other side has racks for tools.

Meter repairman, Dick Hayes, now can repair a defective meter while seated in the cab of his Cushman Truckster. ◄◄

Repairing a Duncan Miller parking meter in Vancouver.

400-Car Parking Unit For 23% Less

Prestressed concrete in this Beverly Hills parking garage brought the price $187,000 below the low bid for conventional reinforced concrete.

By using long-span prestressed girders and precast columns, the City of Beverly Hills got a 400-car parking garage for $599,000. This was $151,000 below the city's estimate. The design was by T. Y. Lin & Associates, of Van Nuys, Calif. Welton Becket & Associates were the architects.

Originally plans for the 150-by-150-foot five-story structure called for conventional reinforced concrete. But when the lowest bid was $900,000—or $250,000 above the city's estimate—Ed Tufte, director of public works, returned the bids with instructions that the plans be re-examined for means of reducing the cost. He also indicated that the city would consider alternate designs using reinforced or prestressed concrete.

Twelve bids were submitted on the second call. Six, ranging from $786,000 to $900,000 were for a revised conventional structure, and six from $599,000 to $670,000 used prestressed concrete.

The major factors contributing to this lower cost were: use of 75-foot spans that permitted greater efficiency in floor-area utilization; lower per-square-foot costs; and efficient construction. By providing a parking area free of columns, the garage has the greatest flexibility in parking cars of different sizes. ◄

A Few Words on Traffic Engineering

Traffic engineering is that phase of highway engineering which considers the road, the motor vehicle, and the driver as an integral unit, and provides a safe and fast means of mobility between two locations. This coordination requires working on all phases of engineering, design, striping, traffic control, traffic regulations, etc., says the twenty-second biennial report of the Wyoming Highway Commission.

Signs are the only means of communication between the traffic engineer and the driver. The design of the sign must be such that it can be easily read and understood by all drivers. A good example of modern signing is the system of signs used on the interstate highways. The large green and white directional signs are more than ten times larger than the intersection signs that were formerly used. The message has been reduced to a minimum, yet the size of the legend has been increased. Some of these signs have letter heights of 24 inches.

Another phase of advising drivers of traffic control measures is the use of paint to define channelization, centerlines, etc. A famous traffic engineer once said that "more can be done with a gallon of paint than with a dozen highway signs." Striping properly applied will guide drivers through transitions, turns, or intersections with the least possible trouble. In Wyoming the Traffic Engineering Division of the State Highway Commission is responsible for management of the hand striper which is used in applying all channelization. The 2½-ton truck-mounted stripers are the responsibility of the Maintenance Division, but these units are too large to turn the small corners required for channelization.

Special traffic studies were conducted in all counties of the state, and city studies, which include parking, striping, signal requests, and school zone investigations, were made in Laramie, Lovell, Gillette, Riverton, Thermopolis, Cheyenne, Casper, Meeteetse, Sunrise, Sheridan and Green River. In Wyoming, traffic signals are limited to urban communities where high volumes are present. There are no state-maintained traffic signals. ◄◄

EDITOR'S NOTE: While hand stripers are used to apply channelization, many cities and states also use larger units. The 2½-ton truck-mounted stripers designed for highway work would not be used to put lane lines on a city street, but the machines that are "in between" the hand units and the big, highway truck-liners merit mention here.

TRAFFIC FINES PAID "ON THE SPOT"

After installation . . . cities report up to 80% of all parking fines collected are paid "on the spot" in DUNCAN FINE-O-METER boxes.

This effective, convenient system eliminates *embarrassing* trips to the police station thereby increasing voluntary payment without complaint. Also, *reduces* the number of tourist violators leaving city without paying fine.

Weather-proofed violation ticket-envelopes used with the DUNCAN FINE-O-METER are readily available at low quantity prices. New "heavy-duty" ticket envelopes, especially prepared to withstand long periods of exposure to extreme moisture now available for prompt shipment.

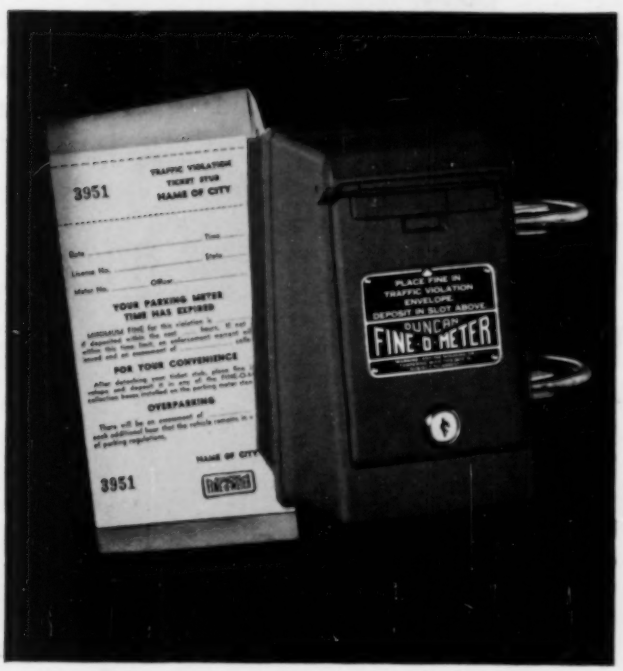
For good public relations . . . investigate DUNCAN'S convenient system of traffic fine collection.

WITH

DUNCAN FINE-O-METER

MOTORIST PAYS FINE "ON THE SPOT"

ea$y...convenient!



OFFICER ISSUES TICKET-ENVELOPE

EASY TO COLLECT

DUNCAN PARKING METER

A Division of NAUTEC Corporation

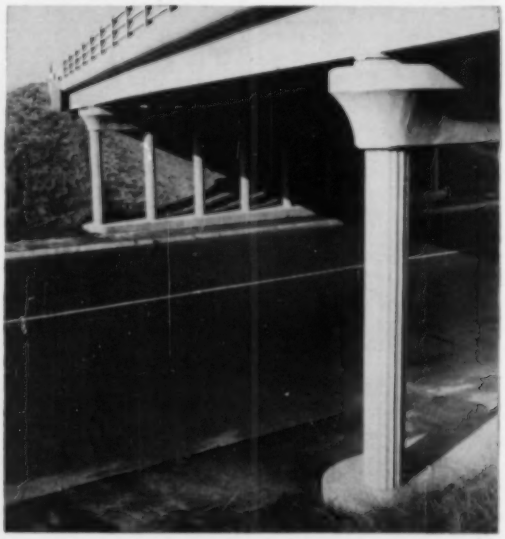
CHICAGO 22, ILLINOIS

Here's help for

HIGHWAY PLANNERS

MONOTUBE LIGHTING POLES

MONOTUBE SIGN SUPPORTS

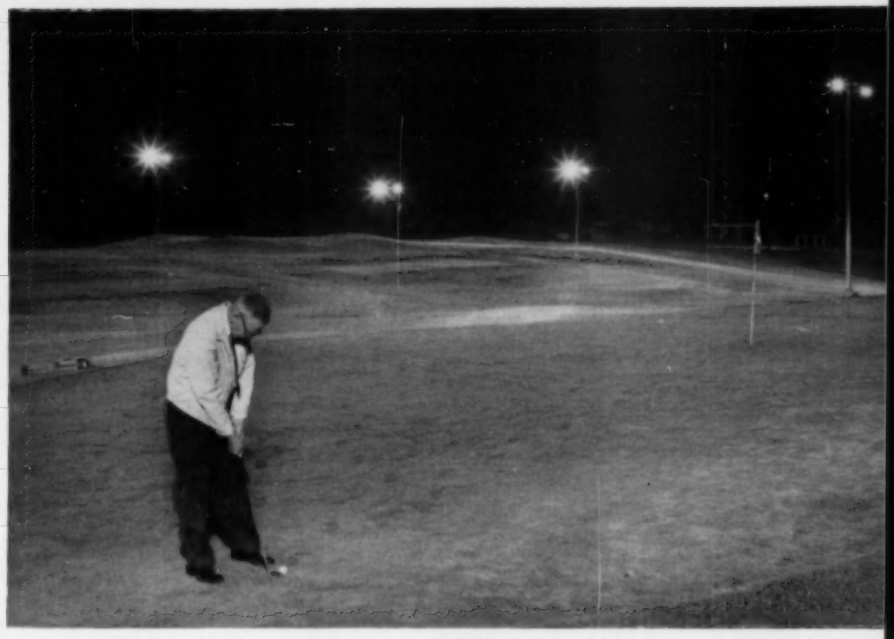


MONOTUBE FOUNDATION PILES

Monotube poles, piles and overhead sign supports, used on many of the nation's leading highways, help provide increased driver safety, improved traffic flow, and economy in various phases of highway construction.

THE
UNION METAL
MANUFACTURING CO.

Canton 5, Ohio • Brampton, Ont., Canada



A golfer continues his game well into the evening hours at this nine-hole course in North Carolina; the course is lighted to 7 footcandles by 66 of G.E.'s pencil-thin tubular incandescents on 12 poles 30 feet high.

Prelude to Municipal Floodlighting

Floodlighting was playing an increasing role in the municipal picture until the war blotted out all such lighting except for plant protection. Since 1948 it has been on the march again.

Where formerly building-facade and decorative-fountain floodlighting were probably the principal applications, sports lighting for exercise and recreation is now king of the floodlighted night. Close beside it are the mushrooming parking lots.

There are various works and bulletins on how and with what to floodlight. A current one is Bulletin 6175C telling "How to Select and Apply Floodlights." The material that follows is extracted from this 16-page booklet, copies of which are available from the Outdoor Lighting Department, General Electric Co., Hendersonville, N. C.

Floodlight applications employ two to several hundred units. Despite the many floodlight designs, uses, and methods of installation, there are only a few basic fundamentals to follow in order to obtain the maximum benefit at a minimum of cost.

Floodlighting plans should incorporate the following points:

Employ a level of illumination adequate for the specific job. For example, in a parking lot where only identification of obstructions and surrounding objects is required, less light is needed than in operating a piece of equipment where attention to detail is important.

The table provides a guide to the recommended levels for each application other than building exteriors, suggested by the Illuminating Engineering Society.

Choose floodlight locations for balanced, uniform illumination. Where beams are projected at an angle, floodlights should be located so that two or more cover the same area. The more floodlights concentrated in one area, the greater will be the overlap of beams; shadows will be avoided and greater uniformity will result.

Cover the surface efficiently. Select the beam spread and lamp size that give the most satisfactory coverage

(Continued on page 144)

IES RECOMMENDED FOOTCANDLE LEVELS
(For application other than building exteriors)

Application	Footcandles maintained
Airport Aprons	1-5
Building	
General Construction	10
Excavation work	2
Loading and Receiving	
Platforms	20
Freight car interiors	10
Outdoor Substations	1
Parking Areas	0.5-2.0
Piers	5
Protective Lighting	
Boundaries	.2
Entrances	
Active	5
Inactive (usually locked)	1
Vital locations or structures	5
Active shipping area	20
General Inactive areas	1
Storage Yard, Active	20
Water Tanks (with advertising message)	20

(Continued from page 143)

(as described in the two preceding paragraphs) with the smallest number of floodlights. For greatest efficiency, use the wider floodlight beams and higher wattage lamps.

Aim toward the point of emphasis. The center of the floodlight beam (that is, the area of maximum candlepower) should be aimed toward those points that are hardest to reach or that should stand out. This should not, of course, be done at the expense of the rest of the area or to the discomfort of the viewer.

Avoid objectionable glare. If possible, don't aim floodlights toward normal lines of vision. Glare interferes with visibility and may make the installation too uncomfortable for full utilization. Discomfort can usually be minimized by high mounting.

Make floodlight installations inconspicuous and difficult for unauthorized persons to reach. These precautions minimize vandalism. Use adequate mounting methods. Metal, rather than wooden, poles are usually recommended. Mounting should permit practical relamping and maintenance. Hinged poles or adequate pole steps can be employed.

Co-ordinate socket voltage with lamp-voltage rating. Undervoltage operation of the lamp increases its life, but at a reduction in light output.

Lamps are frequently operated at more than rated voltage, when they are in operation in such places as baseball or football fields, where they are energized less than 300 hours per year. A 35% increase in light output can be obtained for only 10% voltage increase, thus utilizing the installation more efficiently.

Use floodlights with low maintenance costs. Low maintenance is most easily obtained by using weatherproof, corrosion-resisting, enclosed floodlights. An enclosed floodlight reduces the accumulation of dust and dirt on lamp and reflector surfaces. A dirty reflector will waste much of the light you pay for. ◄◄

Mercuries Modernize a Palm-Lined Street

When daily traffic reached expressway proportions along its main artery, Inglewood, Calif., provided an up-to-date answer. It transformed the four-lane palm-lined roadway into a six-lane divided boulevard, ran the wiring underground, and installed modern mercury-vapor lighting. Ugly, utilitarian wood poles disappeared, and overhead wires went underground in the modernization.

The growth of this Los Angeles suburb, whose population has increased eight-fold in 35 years to its present 80,000, brought with it vastly increased traffic volume. Along Florence Avenue, the main entrance to the city from Los Angeles, daily traffic last year reached 41,000 vehicles, comparable to Los Angeles freeway volume. The avenue is close by the main approach to the Hollywood Race Track and is the best route from Los Angeles to the L. A. International Airport.

The modernization included removing trolley tracks, widening the effective roadway by 50%, and adding a median strip, on which were installed 130 General Electric twin-mounted mercury-vapor luminaires. The program has greatly eased traffic flow on this high-density roadway, and the new lighting has contributed materially to a sharp reduction in accidents.

The Los Angeles County Optometric Society viewed the new installation and responded by giving Mayor George C. England a lighting award in recognition of "outstanding advancements in street illumination."

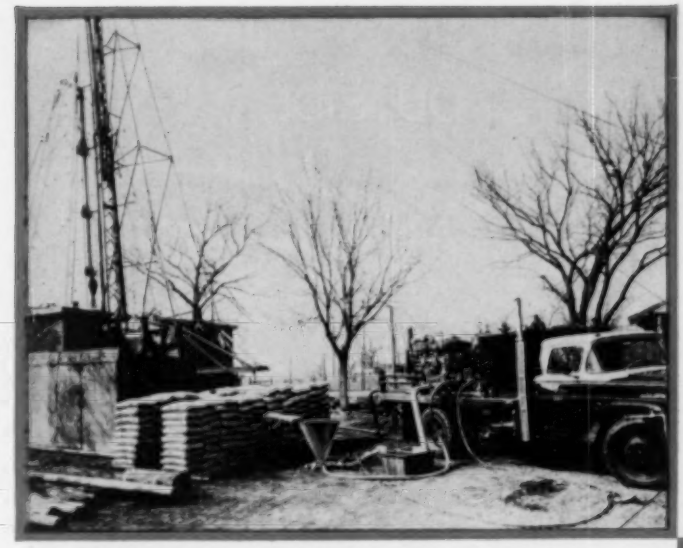
And the *Inglewood Daily News* commented editorially, "The residents of Inglewood should be pleased that their city officials realized how important street lighting is in this age of ever-mounting traffic deaths."

The lighting installation consists of 130 General Electric Type M-400 units mounted back-to-back on 30-foot poles. Six-foot brackets carry the luminaires out over the roadway. The poles are spaced 100 feet apart, providing an average maintained illumination on the traffic lanes of 1.55 foot-candles.

BENTON L. JAMES
Traffic and Lighting Engineer
Inglewood, Calif.

Before modernization this roadway through Inglewood had this haphazard, strictly utilitarian, appearance.

Today the same street reflects grace and efficiency, enhanced by twin-armed lighting standards and mercury-vapor lighting.



CONTRACTORS CONSTRUCT BETTER WELLS

when Halliburton cements them!

The Halliburton Jet-Type Cement Mixer permits continuous blending of dry cement with water in controlled amounts to obtain consistent water-cement ratio throughout the job.

The new well your contractor drills for you will probably be a good one . . . and *you* have to keep it that way. An important step toward continuous high yield from a water well is to construct the well *properly*. Proper construction should include cemented casing which help to provide:

*PROTECTION from migration of contaminated water in adjacent formations, and from polluted surface water.

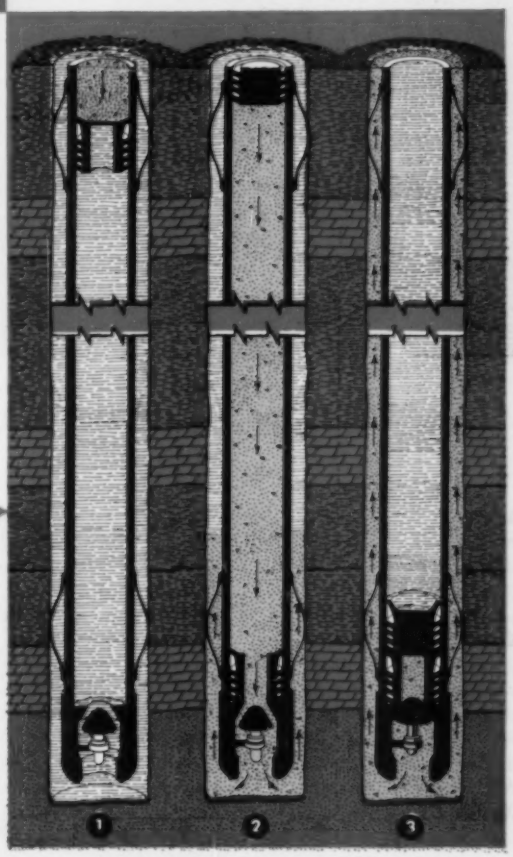
*PREVENTION of bore hole cave-ins which can cut off water sources by filling the well bore or plugging the well screen.

*ISOLATION of the aquifer to be produced.

*PROTECTION of the exterior of well casing from corrosion.

For a better water well, get the *best* contractor . . . and to help keep your well trouble-free, longer, have him construct it properly, utilizing Halliburton's more than 35 years of experience in casing cementing.

The proven simplicity of *Halliburton's* Basic Cementing method



1. The Halliburton pump pressure forces the cement slurry into the casing behind the Bottom Plug which moves ahead of the slurry, and displaces well fluids in front of it to outside of the casing.
2. When the Bottom Plug lands in the Float Shoe, additional pump pressure ruptures the plug diaphragm, allowing the cement to pass through the end of the casing and up into the annular space between the casing and bore hole.
3. When the predetermined amount of cement has entered the casing, the solid Top Plug is inserted above it. Continued pumping of well fluid moves this plug down until it lands on the bottom Plug, forcing the cement outside the casing. When pump pressure is released, the float valve closes, helping to prevent the cement from re-entering the casing. The cement, thus held in position, sets to form a hard, permanent seal so necessary to the future protection of the well. After cement sets, the plugs are drilled out leaving the casing clear.

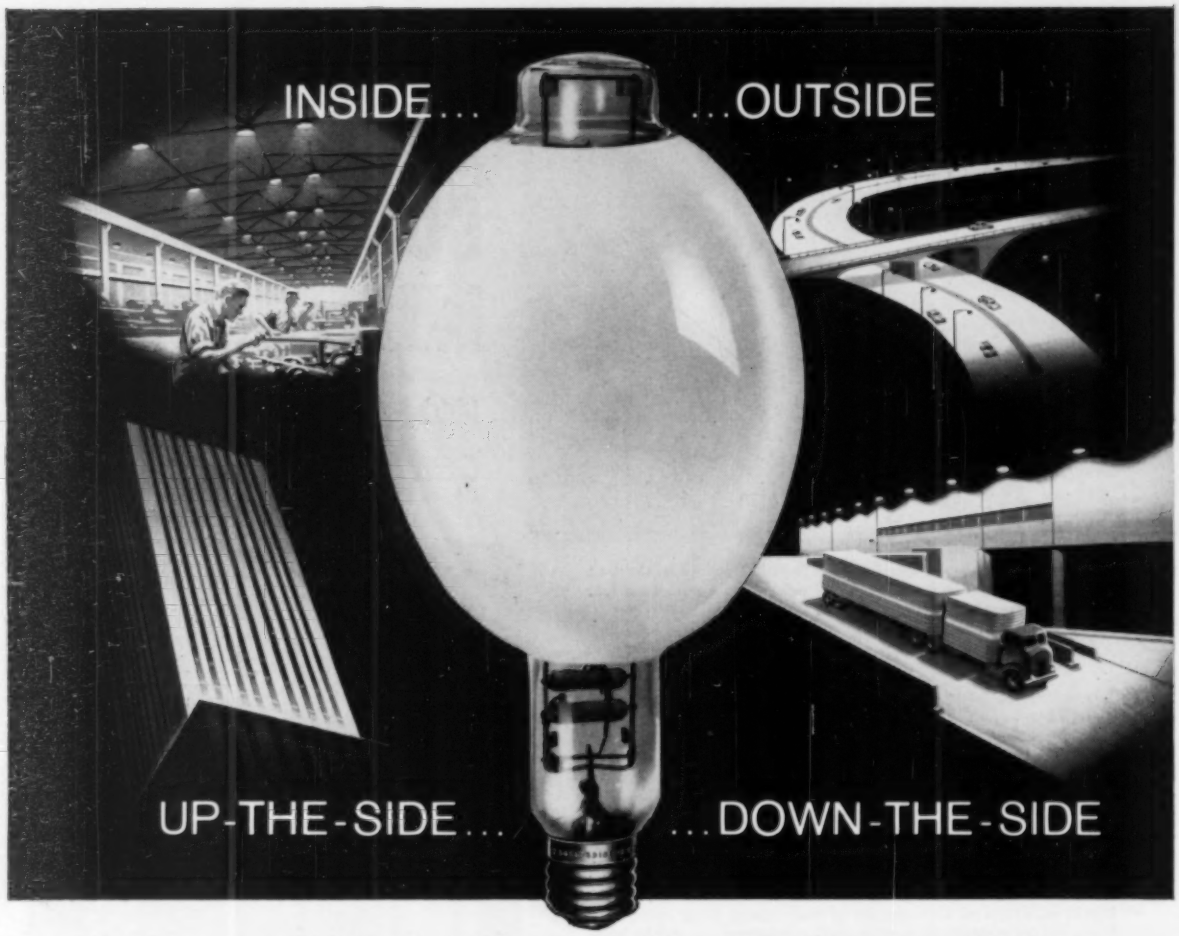
Dedicated through research and performance to better service for America's water wells

WATER WELL SERVICES

Halliburton

COMPANY • DUNCAN, OKLAHOMA

Visit our booth (No. 412) at the A.W.W.A. Convention, Cobo Hall, Detroit, June 4-9.



Only new Sylvania Banner Mercury Lamps deliver all these advantages for indoor-outdoor lighting:

1. Longer life! Now extended to 12,000 hours. With greater maintained brightness giving a dividend of *17% more light during life* than standard mercury lamps.

2. More light! Almost triple the light of incandescents on the same power! Makes Banner Mercury Lamps ideal for street lighting, facades, industrial installations.

3. Ruggedized construction! Shocks, vibrations, fiercest weather don't stand a chance. Hard glass shell protects on the outside; welded multiple supports, springs protect on the inside, assure longer life.

4. Life recording base! Unusual feature saves time, paper work by letting you scratch installation date in numbers right on base of lamp.

5. Certified Performance Policy guarantees: "Banner Mercury Lamps may be returned to the supplier for full exchange if they fail in less than 1000 burning hours, and thereafter (up to 5000 hours) for pro-rata exchange, in accordance with a pro-rata exchange value table set forth clearly in the policy form."

PLUS Lowest TCL (Total Cost of Lighting), which means cost of lamps plus power plus maintenance. Get the most light for your money. Call your Sylvania representative. Or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

SYLVANIA

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

Cleveland's Mall Is Now Lighted

Roses and geraniums on Cleveland's Mall display their beauty at night.

Acting upon the suggestion of Mayor Anthony J. Celebrezze, the City of Cleveland, Ohio, recently planted more than 1,300 rose bushes and 11,000 geraniums in its downtown mall.

The mall covers six blocks in downtown Cleveland. Plantings and mowings keep it fresh and attractive.

City officials planned lighting for safety and enjoyment. Soft, even lighting was required to bring out the true color and texture of the flowers. The fixtures had to blend with the surroundings.

Post-top luminaires by Line Material Industries met these requirements and were installed. The lamps are color-improved mercury. Spaced 85 feet apart, with Holophane prismatic refractors, the luminaires provide low-intensity even-lighting distribution for the plantings and walks, and spill lighting onto the adjacent lawn area.

Mayor Celebrezze expressed the hope that the improved mall will provide more year-round enjoyment for his city's residents and for its many visitors.

HAROLD J. LAUSCHE
Properties Director

Park Commissioner L. V. Corsi (left) and Mr. Lausche inspect the new lighting on the Mall.

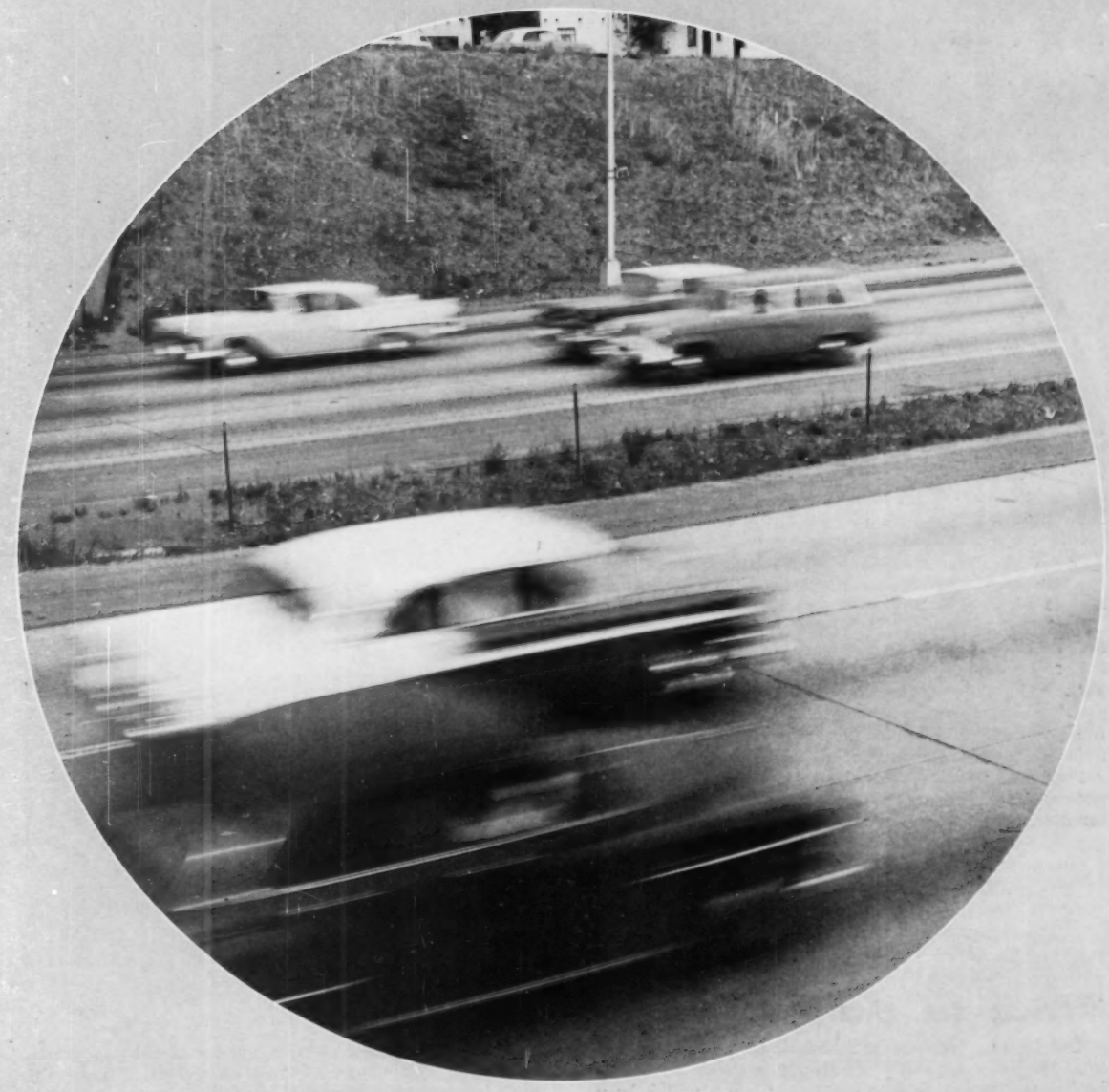
What Is Safe Roadway Lighting?

The famous "American Standard Practice for Street and Highway Lighting" is being revised. It has to be brought up-to-date to meet new needs which have arisen since it was issued in 1953. For instance, a great deal of misunderstanding has developed with regard to the interpretation of the footcandle levels. These often have been misinterpreted as initial footcandles rather than minimum maintained in service values. The reason is quite obvious in that before the recent popularity of gaseous lamps and multiple circuits there was no problem since series filament lamps had a constant lumen output throughout life. This characteristic does not hold true for gaseous sources and multiple circuits, so it was not uncommon to find lighting systems drop to below 50% of the initial footcandle levels. Fortunately, there has been a great improvement in gaseous lamps—especially mercury, which, at the end of rated life of 12,000 hours still has 90% efficiency.

There has been considerable controversy among government people in determining design criteria for lighting levels. Since dollars and cents can be directly tied to the footcandle values, it becomes subject to questioning particularly from individuals who are not convinced that lighting is important or even

(Continued on page 151)

here's how Honeywell looks at



your traffic detection problems

infrared traffitrol solves them

Solving most of your application, installation and maintenance problems with one detector was a pretty tall order. But Honeywell's new D-101 infra-red *traffitrol* detector is designed specifically for this purpose. It can be quickly and economically installed almost anywhere: on existing poles, signal standards, mast arms, buildings, sign boards, etc. It operates on standard 110 v., produces a compatible signal without amplification. It will detect in from one to three lanes of traffic, as desired. And it is virtually maintenance-free, with a low initial installed cost—less than many detectors which do half as much.

For full information, write today: Minneapolis-Honeywell, Heiland Division, 5200 E. Evans Ave., Denver 22, Colorado

Honeywell

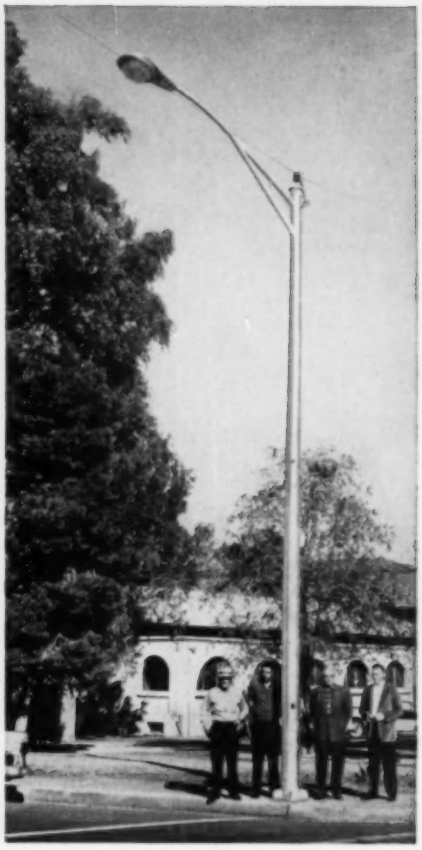
H SINCE 1885 *First in Control*

MODEL D-101

traffitrol

DETECTOR

WHAT A DIFFERENCE!



What a beautiful difference

P & K ALL-ALUMINUM LIGHTING STANDARDS

can make in any community

You're looking down Broadway, the main business street of Needles, California. Ordered by the City Council as part of a relighting program, the installation, made by the California-Pacific Utilities Co., consisted of twenty seven P & K 30 foot tapered aluminum lighting standards. As you can see from the photos above, the difference is immediately apparent. The result is greater safety for the community at night and the beautiful modern appearance of the new standards by day. Of course, no painting ever required. Why not write for P & K's new brochure ALS-5 for a wealth of helpful information in your street lighting plans.

P&K **PFAFF & KENDALL** 84 Foundry Street, Newark 5, N. J.

Branch Sales Office: San Jose, California
In Canada: Powerlite Devices LTD., Toronto, Montreal, Vancouver
Export Representative: Philips Export Co., New York, N. Y.

(Continued from page 147)

necessary. A clarifying statement was issued two years ago by the Illuminating Engineering Society but, as often happens, this seems to have been lost, buried, or ignored. In other words, the designer of the system should always choose the lowest point in service as the basis for determining footcandle levels required. Obviously, it is important to have the requisite amount of light toward the end of lamp life and just before the luminaire is about to be cleaned.

Our present "American Standard Recommended Practice for Roadway Lighting" does not prescribe adequate lighting for our present needs. However, I must take another breath and admit that any significant upward change in light levels would be met with strenuous objections from a number of important user groups and interested organizations. In my opinion, this situation exists because we lack sufficient scientific data to help convince and support engineers and officials responsible for the design and for the appropriation of funds. Also, there is general lack of knowledge on the part of the public of the benefits of well planned roadway lighting. Until we have personally experienced benefits from better lighting, we seem to remain unconvinced.

Dr. H. R. Blackwell, director of the Institute for Research in Vision, Ohio State University, recently completed a series of investigations for some typical roadway lighting tasks. Through precise measurements, he has been able to ascertain the visual capacity of the human eye to perform tasks under different visual conditions.

It was interesting to note, for instance, that at a viewing distance of 200 feet the range of illumination requirements was 0.34 footcandles for an old automobile and 900 footcandles for a brick. A mannequin representing a 12-year-old girl with 20%-reflection-factor clothing required 0.4 footcandles. A black poodle dog required 1.8 footcandles. It soon became apparent that the illumination level required for roadway lighting varies greatly depending on the type and size of the task. For practical reasons, the mannequin and the black poodle were selected from these many objects as standard realistic targets which were used throughout all the remaining measurements.

Now, it might be well to pose the question, "What does the IES Roadway Lighting Committee expect to do with the Blackwell findings?" I wish I could give you the answer today. While I cannot tell you, at this time, the outcome of our committee's final recommendations, I think that the Blackwell data shows our present minimum recommended footcandle levels are too low.

We have a great number of installations in this country with levels far exceeding the minimums as recommended by the "American Standard Practice." The significant fact is that these installations are not considered excessive by the users.

I am convinced that if we were to light our roadways to levels at least 50% higher than the present recommended practice, we would still be conservative. I am also convinced that users would gladly pay the small additional cost and be a good deal happier. It should be emphasized that a 50% increase in illumination can be obtained for less than 25% added cost.

Higher levels are needed to fulfill present and future traffic safety requirements. Public officials or utilities are entitled to receive more data and information. However, I think in the meantime that we can and should promote lighting levels at least 50% above present recommended minimums of the American Standard Practice. Rest assured that this will not be excessive lighting and the public will be grateful and willing to pay for these heretofore unrealized benefits.

W. H. EDMAN
Holophane Company, Inc.
Newark, Ohio

Tulip Time Is Light-Up Time

Tulip Time had its beginning in Holland, Mich., in 1927 when Miss Lida Rogers, the high school biology instructor, suggested planting flowers as a civic project. Since 85% of the people were of Dutch extraction, tulips were a natural choice. Subsequently, the city bought and planted 100,000 Dutch bulbs.

Thousands of visitors come to see the splashes of color throughout the city. The festival now includes klompen dances, street scrubbing ceremonies, parades, a flower show and music. A unique feature is a park-lighting system designed to guide visitors along the tulip lanes in Centennial Park.

City officials had sought a luminaire that would provide year-round high-quality lighting in harmony with the park surroundings. Their selection was Post Top luminaires, manufactured by Line Material Industries, Milwaukee. With a 6,000-lumen lamp, the luminaires control light in IES patterns. Mounted on 19-foot aluminum poles, the new fixtures are easily and economically maintained.

HAROLD KARSTEN
Assistant Superintendent of Utilities
Board of Public Works
Holland, Mich.

Centennial Park is safe and attractive at night.

Chief John L. Swindle proudly shows off new Mack Model C-95 1000-gpm cab-forward triple-combination pumpers delivered to Birmingham, Alabama. Fire apparatus feature 200-gal. booster tanks . . . 4" rear suction connection. Vehicles are powered by 276 hp. Mack Thermodyne engines, which deliver 640 ft. lbs. of torque at a low 1400 rpm.

Birmingham looked at the record ...and reordered Mack apparatus

Four brand new Mack 1000-gpm pumpers have just been delivered to Birmingham, Alabama, bringing to 11 the total number of Mack fire apparatus operated by this key southern industrial city.

Birmingham's up-to-date Fire Department selected Macks because of the fine record compiled by earlier models . . . some built in 1938 and still in active duty.

The department chose Mack fire apparatus for other reasons, too. Among them: the famed Mack Thermodyne® 707C engines . . . Mack-built transmissions . . . Mack-built rear axles . . . the equipment and gear ratios that make Macks the masters of any demanding fire-fighting assignment.

In fact, so dependably have Birmingham's Mack apparatus performed over the years that, in addition to the four being placed in service, a fifth 1000-gpm pumper is scheduled for delivery soon.

Why not take another look at your apparatus replacement program now? Chances are your department can benefit by the addition of new Mack equipment. Take a lead from Birmingham's Fire Department . . . choose the finest.

Mack Fire Apparatus, Allentown, Pennsylvania.
Mack Trucks of Canada, Ltd., Toronto, Ontario.

8227

MACK

FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS — 500 to 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65′ to 146′ . . . COMBINATION LADDER TRUCKS

New York City's "Salute to the Seasons"

New York City proves that flowers and shrubs can grow to beautify its canyon-like streets

It all began several years ago when Mrs. Albert D. Lasker contributed a large collection of hardy Korean chrysanthemums to New York City's famed Central Park as a memorial to her mother. Later, to demonstrate to the city fathers that flowers can bloom not only in the parks, but in the city streets in the midst of traffic fumes and other hazards, Mrs. Lasker planted first four blocks, then later twenty-two blocks, of tulips, daffodils and ground cover at her own expense. When these proved successful, gentle prodding of the city fathers led to an official city appropriation for the beautification of the city streets with plants and flowers, and the beginning of the "Salute to Seasons" program, which has so brightened mid-Manhattan's face that it is now a permanent municipal program.

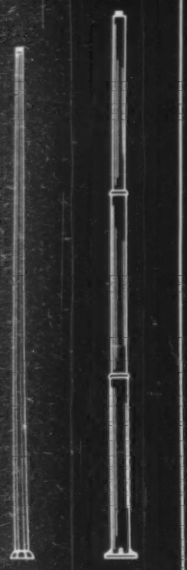
Fourth Year

The program is going into its fourth year, under the direction of the City's Department of Commerce and Public Events in cooperation with the Department of Parks and other city agencies. Private citizens, real estate, insurance and banking interests, retail merchants, carrier systems, commercial and residential property owners, neighborhood, industrial and trade associations, museums, churches and others have all recognized the value of such a program and have given it support.

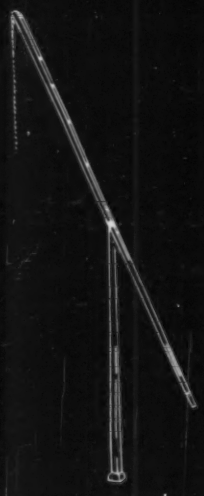
It was initiated to alleviate the hunger for beauty in the city by adding mass floral plantings on major thoroughfares and has grown to include tree and shrubbery plantings both public and private, floodlighting of some of the city's great public buildings, gala festivities with the changes of season and the flying

(Continued on page 155)

Manhattan's steel, stone and glass-walled canyons provide a startling contrast to the festive floral display of New York's "Salute to the Seasons."



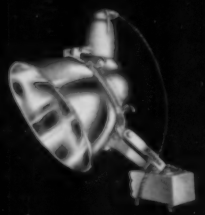
No. 560-30-3 No. 115-40-5B
RIGID POLES



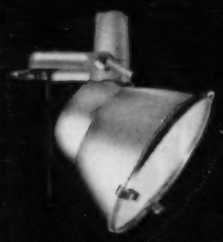
No. 199-Series
HIGH STRENGTH HINGED POLES

No. 4213-P
ALUMINUM FLOODLIGHT

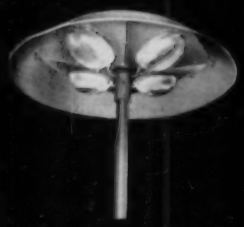
No. 3807
ELIPTOR FLOODLIGHTS



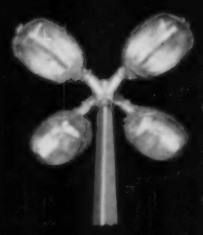
No. 2001 REAR
SERVICE FLOODLIGHT



No. 4411-P
ECONOMY FLOODLIGHT



No. 5442
ULTRA-LITE



No. 5452
QUAD-OVAL LUMINAIRE

Everything in outdoor lighting equipment from one reliable source

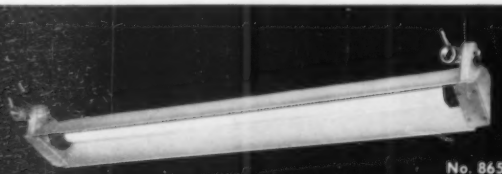
Send for the comprehensive Revere Catalog that lists hundreds of outdoor lighting products, applications and specifications

Revere's 136-page outdoor lighting catalog shows you the industry's widest range of outdoor fluorescent, incandescent and mercury luminaires, as well as poles and accessories. Revere equipment is *design-matched* for best appearance and peak lighting efficiency . . . *structurally-matched* for strength, balance, trouble-free installation and easy maintenance. Write today for your copy of this easy-reference catalog of outdoor lighting equipment.

Revere ELECTRIC MFG. CO.

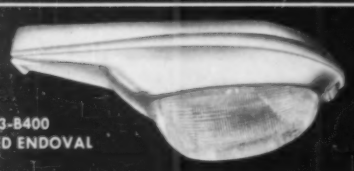
OUTDOOR LIGHTING

Revere Electric Mfg. Co. • 7420 Lehigh Avenue • Chicago 48, Illinois (In suburban Niles)
Long Distance Phone: NIles 7-6060 • Chicago Phone: SPring 4-1200 • Telegrams: WUX Niles



No. 8650 Series
FLUORESIGN LUMINAIRE

No. 9946-V
HIGH LEVEL AREA-LITE



No. 2633-B400
UNITIZED ENDOVAL

No. 2513-B175
UNITIZED URBANOVAL

No. 2274
ENDOVAL

No. 2501-B250
URBANOVAL

No. 6823-NFH
QUARTZOVAL "500"

(Continued from page 153)

of brightly colored banners throughout Manhattan.

Mrs. Lasker felt that some of the less favored areas of the city should also be included, so in 1958 she contributed funds for flowers for each of the four other boroughs comprising New York City to be matched by equal sums from the city. Thus the programs early came to embrace the whole city although the heart of the city has experienced the greatest transformation.

With private funds a booklet was published to stimulate private initiative to undertake planting projects. The booklet describes the purpose, what, where, when and how to plant trees, vines, ground cover, shrubberies and flowers. The booklet has been widely distributed and a tour of the city shows that it has been widely read and its suggestions followed.*

New York City, especially Manhattan, has a tremendous concentration of high buildings which absorb and tend to hold the summer heat. Its paved thoroughfares entrap the gaseous fumes from its motored transportation vehicles and the dirt and soot of its industrial complex make a difficult environment for plant life. As a result the city has, over years of trial and error discovered those plants best suited to survive under these conditions.

Suitable Trees

Two trees have thrived under these difficult conditions, the London plane and the ginkgo. The city uses strains of the plane tree which are less affected by anthracnose and by trunk frost cracks which commonly afflict some other strains. The plane tree is a good shade producer. The ginkgo, because its foliage is not heavy, fits well in areas where signs, windows or displays must be unobstructed. The ginkgo is admirably suited for city use. It is the only known prehistoric tree to survive modern times. It has no known diseases, lives for 250 years, and its bright, green foliage and individualistic and unusual manner of growth make it particularly attractive. Where there is more open space and less concentration of building the Park Department uses oaks and sweet gums successfully.

When a resident decides to plant a street tree, he gets in touch with the Borough Director of the Park Department who has a tree inspector determine where and when trees may be planted. Then he makes out an application to plant, orders his trees and when they are planted the city supervises the work to be sure that it is done properly.

Street trees are planted along main thoroughfares in a 5x5x3-foot excavation. If the sidewalk is very narrow the pit may be 4x6x3 feet. On side streets the pits are 3x5 by three feet deep. The trunk is wrapped and a galvanized metal shield affixed at the bottom to protect the tree. The tree is staked with three stakes to hold it securely. The contractor who furnished the tree is required to give a one-year guarantee. Although the resident has paid for the tree, after the one-year guarantee period, the tree becomes the property of the city.

One of the remarkable things about the "Salute" program has been the absence of vandalism. Once people know that flowers were set out in an effort to beautify the city, van-

(Continued on page 157)

* Free copies of this booklet may be obtained by writing to: "Salute to the Seasons," Department of Commerce and Public Events, 625 Madison Avenue, New York 22, New York.

protected by a MIRO-FLEX SAFETY SUE!

From the moment Miro-Flex's Safety Sue is on the job, she protects this nation's most vital resource — our most valuable possession — our children. This portable school warning sign is a silhouette type with fully embossed 30" x 20" zinc-coated, Bonderized steel panel. Miro-Flex signs are embossed for extra strength and rigidity as well as increased legibility. For safety's sake buy premium quality Miro-Flex embossed signs. Competitive makes are... rarely as attractive... never so enduring.

THE MIRO-FLEX CO., INC.

1824 E. SECOND ST. • WICHITA 14, KANSAS

MS-961

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

DEPENDABLE

...a one word definition of
MUELLER® *Gate Valves!*

Mueller Gate Valves in your water supply or fire protection system is your assurance of years of maintenance-free service. This fact is due largely to a design-exclusive . . . Mueller's Four Point Wedging Mechanism that assures tight, sure shut-offs. This unique principle exerts equal seating pressure at four points near the edge of each disc to eliminate deflection and distortion. Write for complete information on the variety of ends and wide range of sizes on these AWWA Gate Valves.

specify Mueller . . . there is no "equal"!

MUELLER CO. since 1857 QUALITY
5584

MUELLER CO.
DECATUR, ILL.
Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

(Continued from page 155)

dalism stops. Even in "tough" neighborhoods children have been seen to pat the flowers, but not pick them.

But aside from the "Salute" program vandalism has been somewhat of a problem to the city. In dealing with this problem the department has learned many lessons. For instance, they found that it often takes from two to three years after planting is first done in a neighborhood before vandalism stops. In the early WPA days they had an extreme example of this. They planted an area of ivy; but the next day there wasn't a leaf of ivy left. The ivy had simply moved up to grace the windows of the surrounding apartments! In this same area they had installed wooden benches. Neighborhood boys removed the brass screws from the benches, burned the wood and sold the screws. Temporarily they left the area as it was as an object lesson.

Sometimes, it takes time and patience before a neighborhood realizes that by vandalism they are destroying their own parks and grounds. But when complaints began to come in because there were no slats on the benches, park spokesmen carefully explained that it was their own neighbors who had destroyed the slats. When they assured the Park Department that new benches would not be damaged, the department replaced them. The police are alerted when areas are newly planted. With their help vandalism is avoided.

Playground directors also have been most helpful in educating the children to preserve property. This has helped educate the adults too. Boys' clubs have been asked to help police flower planting and they do a good job. But, more important, they become very conscious that these are their parks. Thus a sense of personal pride is fostered which has been most helpful to the Park Department.

Small Trees

At various times the city has had gifts of small trees which because of their size are easily damaged. Whenever such a tree is damaged it is taken up, replanted in the Rikers Island nursery and allowed to grow high enough to withstand damage. Then it is replanted in the park system. In this way valuable trees which would otherwise have been destroyed are saved.

One attractive addition to the "Salute to the Seasons" program was the donation of large three-foot-diameter concrete tubs for the main shopping section by one of the life insurance companies. These are placed at intervals, from 34th to 57th Streets on Fifth Avenue and along 57th Street. Merchants have paid for similar plantings on 34th and 42nd Streets. The Park Department has supervised planting and maintenance. The tubs cost $85, the original planting $115. They are planted with an *ilex crenata* in the center, English ivy around the edge and between the two, chrysthanemums are planted in the fall, begonias in the summer, tulips in the spring, and ruscus in the winter.

The original flower beds which were planted for the "Salute to the Seasons" covered 11 blocks along Park Avenue. Six blocks were planted to ground cover and daffodils and five with flowers including tulips in the spring, begonias edged with santolina in the summer, and chrysanthemums in the fall. A variety of summer annuals were tried but failed to maintain blooms through the summer season; begonias finally were successful. Now the program includes planting from 34th to 75th Streets along Park Avenue. ◄◄

TENNANT Traffic Line Eraser...

Removes traffic lines

- **fast** (4 TO 10 FEET PER MINUTE)
- **easily** (IT'S SELF-PROPELLED)
- **at low cost** (DOES JOB FOR 1¢-4¢ PER FT.)

OPERATOR guides machine at slow walk. Cutting head cleans path up to 8" wide.

Here's a machine that removes traffic lines faster, easier, and at less cost than any other method we know of . . . the TENNANT Traffic Line Eraser.

Does job in one operation. High speed 1450 rpm cutter-equipped cylinder pulverizes, shaves off paint lines in a single pass. Removes old markings permanently; no bleed-back.

Has self-propelling action. Makes line erasing a one-man job. Cutter head moves machine forward at a slow walk; you merely guide it. Cutters can be spaced to cover path up to 8" wide.

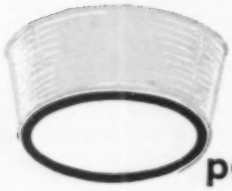
Removes 4 to 10 ft. per minute. Saves time; eliminates need for sand blasting or chemicals. No need to tie up traffic. Removes lines at a cost of about 1¢ to 4¢ per foot. Ideal for concrete and most other paved surfaces.

Has many special uses. Excellent for cleaning lines for repainting; helps assure good bond for new paint. Also used for erasing tire marks; cleaning up oil spots; roughening slippery areas; smoothing ridges, minor humps, etc.

WRITE *for details.* G. H. Tennant Co., 751G N. Lilac Dr., Minneapolis 22, Minn.

TENNANT TRAFFIC LINE ERASER

SPECIALIZED MAINTENANCE EQUIPMENT



Outstandingly Successful!

Open-Bottom Refractors by HOLOPHANE

4652 . . . IES TYPE II
4654 . . . IES Four Way TYPE II
4655 . . . IES TYPE V

Specifically Designed
for **PEMCO**
SUBURBA-LITE
Luminaires

Better Street and Property Lighting at Lower Cost

HOLOPHANE Open Bottom Refractors are highly recommended for lighting residential and suburban streets, service stations, parking lots, recreational areas; also industrial and institutional grounds. These prismatic glass refractors resist thermal shock, are impervious to weather, present a crisp modern appearance.

Check these 5 Important Advantages:

1. ***High Utilization Efficiency*** . . . Prismatic control puts more light on street or roadway.
2. ***Wide Distribution*** . . . Correct, precise distribution spreads light over wider areas.
3. ***Effective Glare Control*** . . . Accurately molded prisms direct light away from upper glare zones.
4. ***Greater Economy*** . . . Less units needed for maximum light . . . More illumination per dollar.
5. ***Easy, Low-Cost Maintenance*** . . . Open bottom permits simple, quicker relamping and cleaning.

Just off Press! Write for 24 Page Book "Street Lighting Design and Application."

HOLOPHANE COMPANY, INC.
Lighting Authorities Since 1898
STREET LIGHTING DEPT., NEWARK, OHIO
THE HOLOPHANE CO., LTD., 418 KIPLING AVE. SO., TORONTO 18, ONT.

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

New MPR for Planning

President Kennedy recently stated the case for better public relations in planning like this, "Only when the citizens of a community have participated in selecting the goals which will shape their environment can they be expected to support the actions necessary to accomplish those goals." Recognizing this, here is how Minneapolis, Minn., West Palm Beach, Fla., and the State Planning Commission which serves Tennessee cities are informing citizens about planning and zoning.

The Minneapolis Story

In Minneapolis, the mayor, council, and planning commission have teamed up to educate 5,000 industrial, business, and social leaders about zoning and the need for an up-to-date zoning ordinance. While many public relations tools have been used, the backbone of the information effort has been a pamphlet, "You and Modern Zoning," and a series of newsletters, the "Minneapolis Zoning Preview."

The pamphlet sets forth the what, why, and how of modern zoning. It makes its point visually (with graph, symbols, charts) and with a concise text (short sentences, hard facts). The 9-by-6-inch booklet multilithed in blue on white paper, was prepared for mailing without envelope. It plugs away at these ideas:

1. Progress and an "era of change" add up to problems in the city.

2. A new zoning ordinance is needed because the old one is inadequate in specific ways (these are detailed).

3. Your money, property, and way of life are involved.

4. The responsibility for securing an adequate zoning ordinance is yours.

Having done this PR-spadework via the pamphlet, the Minneapolis officials turned to the newsletter format. The seal of the city, a key symbol, and the slogan "Good Zoning is your key to better living," are featured in each issue. The "Preview" is handsome looking, bearing the earmarks of its designer, former advertising official Philip Kobbe.

Each legal-size, single-sheet newsletter sells a fact—just one per issue. The information comes in short "takes" set off by layout and typography. The sum total of "preview" information is that Minneapolis must adopt a new zoning ordinance.

Headlines and pictures in succeeding "previews" indicate how the case for zoning is built up. For instance, in the first newsletter, the headline is "Why your city badly needs a new set of ground rules." This issue contains a photograph of a 1924 trolley car, identifying it as a "favorite means of transportation in Minneapolis 36 years ago." The reader is asked pointedly, "You still driving a 1924 car?" (1924 is the year the old zoning ordinance was adopted.)

The second asks "What's wrong with these pictures?" The first shows two houses with a trucking lot jammed between them; the second an apartment house, without off-street parking facilities, being constructed in a commercial area; the third an apartment building with grain elevators in the back yard. A final picture, of the proposed zoning ordinance, is captioned, "What's *right* with this picture?" The answer: "This is the 179-page text of the proposed zoning ordinance—for Minneapolis. You may never get around to reading it, but you'll like what it can do for you."

Minneapolis makes effective use of newsletters to build up the case for the new ordinance.

The third had the theme, "How good zoning gives you a better place," with three pictures illustrating zoning "for living (6 residence zones), for selling (28 business zones), and for making things (12 manufacturing zones)." The fourth explains in photo and chart that "F. A. R." (Floor Area Ratio) is "a scientific step that brings good zoning nearer to you."

The caption for preview 5 is "Do these photographs annoy you?" Pictured is a sign reading, "No parking at any time;" a truck unloading and blocking a business street; a jungle of ugly advertising signs.

Newsletter 6 asks, "What kind of zoning does Minneapolis deserve?" And in tabulated form, the old ordinance is compared with the new.

Typically each newsletter is sparked with pertinent data, a well-displayed figure or quotation like this one from the U. S. Supreme Court, "A nuisance may be merely the right thing in the wrong place—like a pig in the parlor instead of the barnyard." For sample copies of the pamphlet or the newsletter, write to L. M. Irwin, Planning Director, Minneapolis Planning Commission, 501 City Hall, Minneapolis, Minn.

Tennessee's Booklet

Tennessee towns and cities have a ready-made pamphlet for selling citizens on the general need for planning regulations. The publica-

(Continued on page 160)

(Continued from page 159)

tion is the brain-child of Executive Director Harold V. Miller of the Tennessee State Planning Commission (and it is his artwork, too). Produced in lots of 1,000, the item costs just 3 cents. It is small (3¼ by 5¼ inches), has 16 pages including cover, and is produced in blue and black on white paper. The title: "You'd be blue, too, if you were in this fellow's shoes."

The "blue" man has had some "*very* unwelcome mail." One letter informs him, "your taxes are way up because of the extremely high cost of widening narrow streets and buying additional land in built-up areas for school expansion." Another says, "Dear sir, your fire insurance rates will be raised next year because the water mains in your area are not adequate to supply the increased demand plus fire protection."

There are more. One informs him, "We are cutting ten feet (more or less) off the front of your store in order to widen Walnut Street." The letters parade, a few lines to each page, to the point where our cartooned character cries, "And to think, that I'm the guy who appeared before the city council to defeat the proposal to establish a planning commission . . . "

He reviews his "anti" arguments: "I claimed that you can't plan schools and playgrounds before the children are born; it didn't make sense to lay out wide streets where nobody is trying to drive; we shouldn't let a bunch of long-haired dreamers tie up our money in water mains larger than we need right now. I (yes, me) said zoning would drive industry away rather than attract it. I said that zoning was a violation of the Fifth Amendment, claiming that zoning regulations constitute depriving a person of property rights without due process of law."

On the final page, the "blue" citizen admits, "I've short-changed myself, but the worst part is that I've done my neighbors a dirty trick, too!"

In a more formal mood, Planner Miller strongly feels the need for teaching, informing, and persuading citizens about planning and related matters. Says he, "Where the people have a voice they do not indefinitely tolerate laws or regulations which have no meaning to them. Where they have a choice, they do not supply money for any thing or any services which they do not want to buy.

"Conversely, it is only as citizens generally participate in and have an understanding of the development and improvement of their communities that they will actively support planning programs and regulations and will countenance the appropriation necessary to achieve desirable community goals."

For a copy of the booklet, write to Harold V. Miller, Executive Director, Tennessee State Planning Commission, Cordell Hull Building, Nashville 1, Tenn.

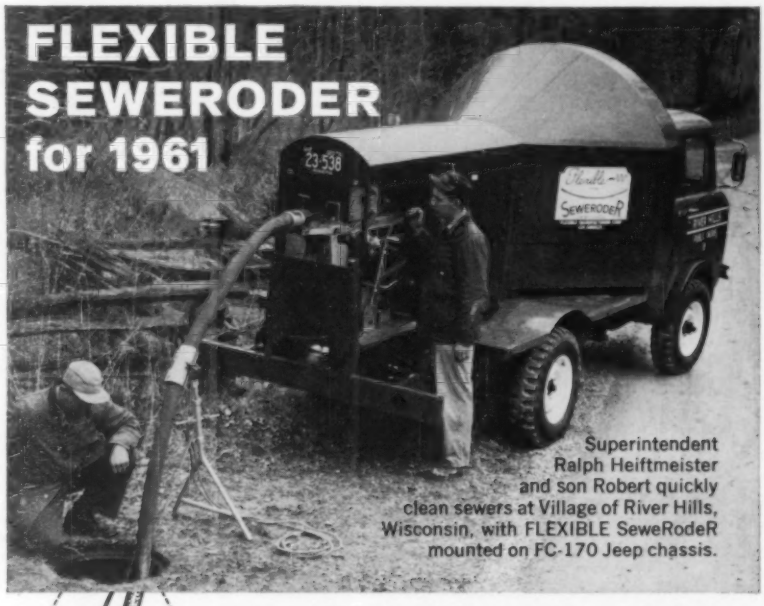
Teen-Ager's Art

The City of West Palm Beach has put out two pamphlets which are hard to distinguish from the best-sellers in a greeting card shop—large, slim cards featuring line drawings. These are printed on two sheets of 8¼-by-11-inch white paper, folded the long way. The publications were designed, written, and drawn by high school students under the direction of city personnel.

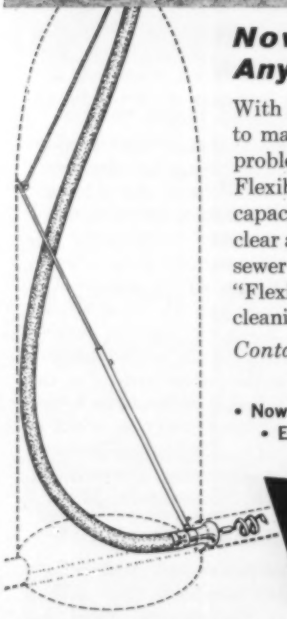
One features a smiling cartoon figure, tipping his hat and eager to explain storm drainage. He begins

(Continued on page 163)

FLEXIBLE SEWERODER for 1961



Superintendent Ralph Heiftmeister and son Robert quickly clean sewers at Village of River Hills, Wisconsin, with FLEXIBLE SeweRodeR mounted on FC-170 Jeep chassis.



Now This Village Can Whip Any Sewer Emergency – FAST!

With a population of 1257 and 20 miles of sewer to maintain, the Village of River Hills solved its problems with existing manpower. They chose the Flexible '61 SeweRodeR and have tripled cleaning capacity for preventive maintenance: the crew can clear a stoppage anywhere along the entire 20-mile sewer system in 30 minutes. Village, town or city—"Flexible" has the equipment to solve any sewer cleaning problem FAST and economically.

Contact your Flexible Sales Engineer today.

1961 FEATURES:

- Now more positive rod drive for smoother operation
- Economical 48″ rods • 900 ft. reel capacity
- 4 to 4,000 lbs. controllable push-pull power
- Instantly reversible.

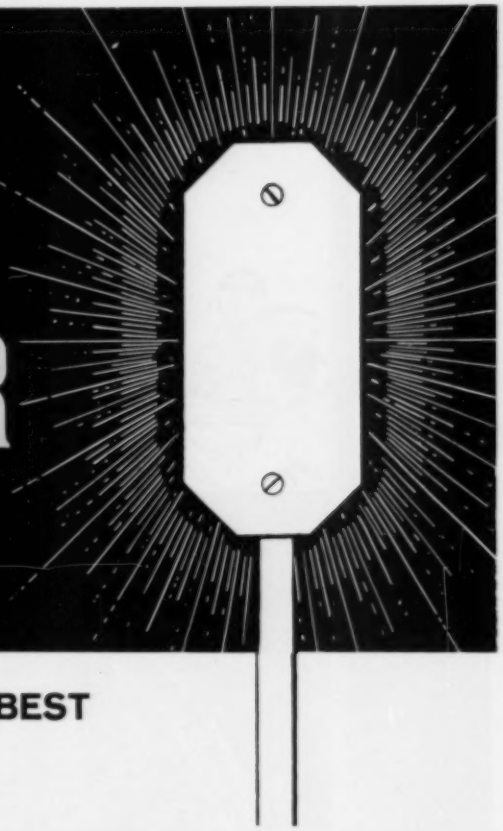
FLEXIBLE, Inc.

415 SOUTH ZANGS BLVD., DALLAS, TEXAS
3786 DURANGO AVE., LOS ANGELES 34, CALIF. • 1005 SPENCERVILLE ROAD, LIMA, OHIO

Never Before a Reflector Like The Sensational New

PRISMO DELINEATOR

The Hottest Thing "Down the Pike"



BY EVERY COMPARISON THE BEST DELINEATOR AVAILABLE

The research facilities of Prismo, the creator of reflective highway marking, now present a completely unique type of delineator. The individual advantages formerly held by all different types of delineators are now combined in this one new product: unsurpassed sight distance, 100% greater angular visibility, lowest price, excellent performance under condensation and moisture conditions, and unlimited shape possibilities.

Be sure to specify the delineator that outshines and obsoletes every other known type. Write for complete information and prices.

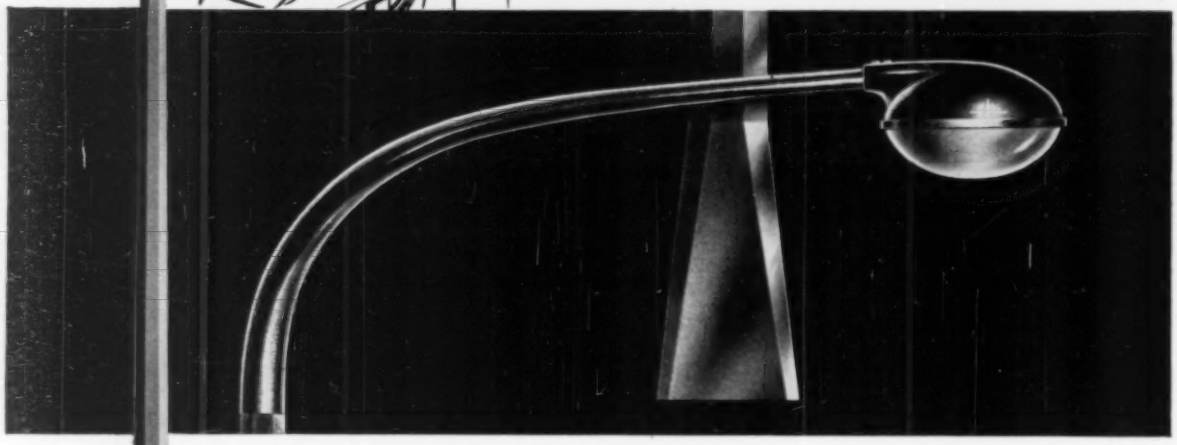
PRISMO SAFETY CORPORATION

HUNTINGDON, PENNSYLVANIA

Classic beauty
with
super-strength

Millerbernd

*Elite** Octa-Tubes



Get all the facts about modern street lighting!

This new booklet explains how modern lighting will benefit your city or development. Describes the complete line of Millerbernd lighting standards, with engineering specifications and recommendations. *Write for it today!*

*

Five modern styles available

Booklet gives complete descriptions and engineering specifications.

NO OTHER lighting standard matches the clean design of the Elite Octa-Tube. It is styled simply . . . to stay modern through the years.

But there is more than beauty. The tapered arm is attached to the *top* of the pole . . . will not disengage when pole is under heavy impact. Its gentle curve forms a natural wireway, free from sharp bends.

The integral base is rugged (made from steel 50% heavier than the pole itself) . . . and because of its height and tapered design, is able to withstand the impacts of hardest service.

Elite Octa-Tubes have fewer parts . . . only 9 (compared with about two dozen in a conventional standard). And of course, all Millerbernd standards are fabricated of *extra-strength* steel!

Millerbernd

MANUFACTURING CO.
WINSTED, MINNESOTA

(Continued from page 160)

inside the cover, "West Palm Beach has a problem—a big, wet problem." The six pages allow ample space to present a map of the city with numbered drainage projects indicating the work the city has planned. To conclude his simple but factual explanation, our hero says, "We've presented this matter informally, as a public service, but we assure you that we agree it's serious. We just wanted to let you know we're trying our best to fill the needs in this critical area."

The second pamphlet is "covered" with the cartoon figure of an inquiring lady, lorgnette in hand, and is titled, "Everybody Plans." Mrs. Civic Leader, it develops, is specifically interested in the completion of South Flagler Drive, a scenic lakeside boulevard.

In the pamphlet, she finds out that 1963 is the target date for finishing the roadway and that the city cannot build any faster because of the high construction cost.

Whatever the roadway and the storm drainage may cost, West Palm Beach has probably gotten the PR-bargain of the decade in these eye-catching pamphlets. Three students worked on each pamphlet. They wrote the copy, did the drawings, prepared the final draft for reproduction on city-operated printing equipment. Each student was paid $10. Total cost, for 2,500 copies of each booklet, was $174—and that amount included the payment to the high-schoolers.

Says West Palm Beach official Dean S. Robinson, "We feel that the presentation of these booklets to the public has been of great assistance to us in explaining controversial and complicated city programs to . . . people in language that they appreciate, understand, and will take time to read."

The pamphlets have "taken the place of many hours previously spent by city officials individually explaining the problems and solutions" covered in the pamphlets. "In fact," Mr. Robinson continues, "they have been so satisfactory in telling the city's story that many of our department heads, before leaving their offices in the morning, make sure that they have a full day's supply for distribution to interested and curious citizens." The city intends "to continue the use of such pamphlets in our program of public relations," the official adds.

For samples of these planning publications, write to: City Manager James J. Mott, City Hall, West Palm Beach, Fla. ◄◄

Now a low cost sign and bracket assembly that meets LYLE standards for quality and durability!

Caught in a squeeze between quality and price in your street signing program? Here's your answer! LYLE has developed a special one-piece alloy aluminum bracket assembly, to give you a lower purchase price and lower installation cost. The bracket is matched to LYLE's standard style name plates (it contains magnesium for greater tensile strength without brittleness) and is an important addition to LYLE's wide variety of highly readable sign styles and exceptionally durable materials.

LYLE SIGNS STILL SPARKLE LIKE NEW AFTER YEARS OF SERVICE!

LYLE craftsmanship and quality control puts extra long life into every sign. Many "old-timers" are still in service because they look like new and there's just no need to replace them! (Incidentally, LYLE keeps all patterns and dies in stock so it's easy to expand your sign program without loss of uniformity 15 to 20 years hence.)

COMPLETE "ONE ORDER" SOURCE FOR EVERY SIGN NEED

In addition to street signs and brackets, LYLE can fill your needs for all types of traffic and highway signs, miscellaneous signs such as "school", "hospital", "park", as well as special signs for special needs. You name it—LYLE can do it, thus simplifying your ordering job *and* giving you assured quality on every public sign in your community.

LYLE GREEN is going great!

Like the new green and white combination on street name signs? LYLE offers several shades of green—reflectorized or not. Most LYLE street name plates—aluminum or steel—are available in this combination . . . at no extra cost!

Send for the new, fully illustrated LYLE Street Name Sign Catalog.

Lyle SIGNS, INC.
2722 University Avenue S. E.
Minneapolis 14, Minnesota

These "extras" make

Sumpmaster

cost less in the long run!

A heavy-duty, pre-engineered pump, BJ Sumpmaster has the "extras" in design and materials that save you money in the long run. High heads to 400 feet at low speed mean longer service, less wear and down time. Superior Meehanite castings used throughout – semi-open impellers are quickly adjustable for wear. Two-piece headshaft for ease of inspection and maintenance. Entirely self-contained for fast installation. High efficiency – non-overloading HP characteristics over the entire capacity range to 3500 gpm. Compact and self-priming, with choice of oil or self-lubricated shafting . . . packing or mechanical shaft seals. Sumpmaster is designed for rugged service in sump, circulating, cooling, booster and general industrial pumping applications – and it's now available from stock for *immediate delivery.*

AWWA Invitation—See for yourself how BJ Sumpmaster "extras" cost less in the long run. A cutaway pump model will be on display during the AWWA Convention, June 4-9, in Detroit.

BYRON JACKSON PUMPS, INC.
SUBSIDIARY OF BORG-WARNER CORPORATION
P.O. Box 70, Lawrenceburg, Indiana
P.O. Box 2017-A, Terminal Annex, Los Angeles 54, California

BYRON BW JACKSON

The Missouri Water Company Courtney Bend Plant, based on a design developed mutually by management and engineers, contains . . .

Unusual But Proved Water-Works Features

By GARVIN H. DYER*

While some of the innovations found in the Missouri Water Company's plant at Independence, Mo., may be found in other water plants, I doubt whether any other plant contains all or even most of them. The features referred to include:

- **Out-of-doors, all-steel plant construction.**
- **Use of pebble lime and chlorine.**
- **Softening without recarbonation or split treatment.**
- **High-service pumps connected directly to filters.**
- **Minimum of treated water storage—only for washing filters at the plant.**
- **Reclamation of filter wash-water.**
- **Visual indicators with automatic control of operations.**

Designed by Black and Veatch, consulting engineers of Kansas City, Mo., the plant has successfully processed well-water from the Missouri River underflow for approximately five years. Although raw-water quality varies from day to day and from season to season, plant effluent quality can be maintained within close limits with little difficulty.

Five wells, located relatively close to the south bank of the Missouri River, tap what is known as the Courtney Bottoms. Actually this source of supply is a large, underground river flowing slowly through the gravel beds underlying the surface river.

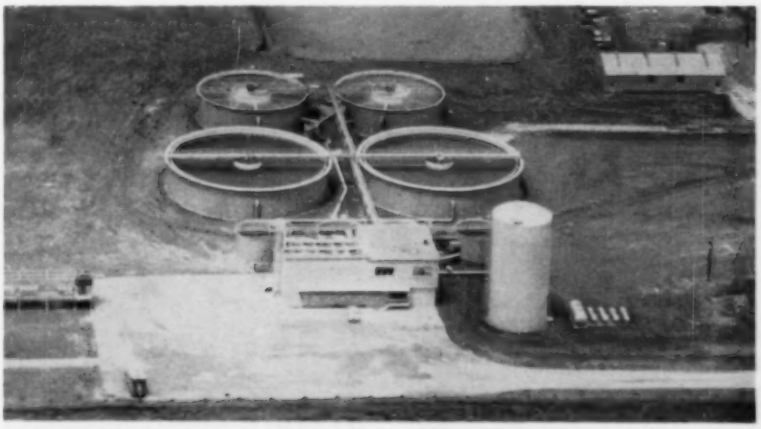
Drilled by the Layne-Western Company, the wells vary in depth from 107½ feet to 123 feet. Each is four feet in diameter and contains 32 feet of 42-inch (o.d.) steel casing and 50 feet of 18-inch Layne stainless-steel shutter screen. Gravel of selected size fills the space between the screen and casing, and the outside of the well. All are equipped with Layne pumps; four vertical turbine-type units driven by 60-hp Allis-Chalmers weatherproof motors and one submersible-type driven by a General Electric submersible motor. The top of the wells are sealed and the motors located on platforms above the flood plain. Three wells produce over 3.0 mgd each and two produce a little over 2.5 mgd each.

The total hardness of water obtained from wells in this area varies from 250 ppm to 700 ppm. River-water hardness averages around 210 ppm. We felt that if sufficient infiltration could be induced through the bed of the river, the result would be softer raw-water and therefore a cheaper water to treat. This appears to be the case. The effective filtration media in the river-bed prevents transmittal of contamination from the river to the underground supply. The fact that not one tube of over 7,200 tubes inoculated with the raw-water from the wells, since the plant went into service, showed positive B-coli indications, bears out this conclusion.

A Lock Joint concrete pipe header conveys the water from the well field to a "splitter tank" in the plant. This tank divides the water equally

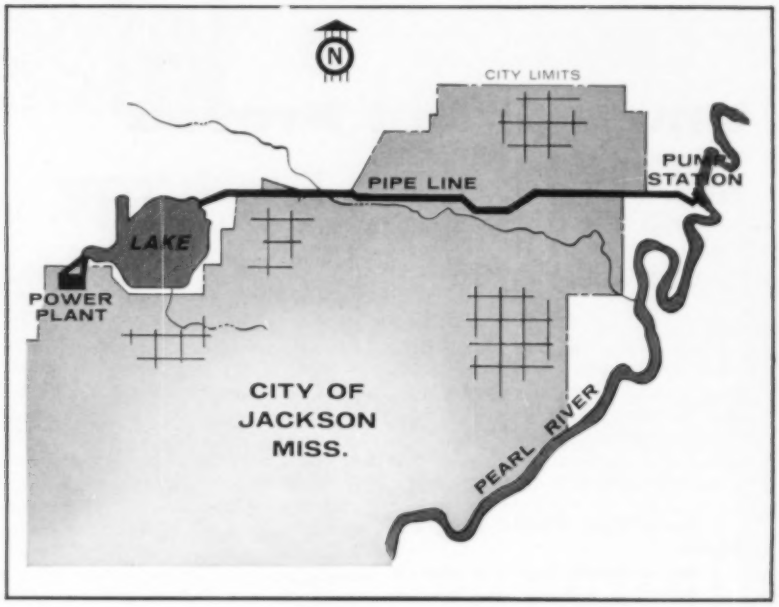
(Continued on page 167)

All well pump motors, except for the submerged unit, are raised well above any anticipated flood level.



One feature, immediately apparent to the visitor, is the out-of-doors, all-steel construction of the Courtney Bend plant.

* Mr. Dyer is vice president of the Missouri Water Company and past president of the National Society of Professional Engineers (1957-58).



385 Acre Lake Filled By Six Mile Concrete Pipe Line At Jackson, Miss.

Building a reservoir to provide cooling water for a power plant is not unusual. But to supply it with a 6-mile, 20-inch pipe line is.

The Mississippi Power and Light Company's Rex Brown Station at Jackson planned to triple its capacity, but was concerned that pulling more ground water from its wells might materially affect the ground water supply in the area.

They came up with the idea of a reservoir on a nearby unused piece of public land that would do the job. And although some surface water would find its way into the lake, the primary source of water would have to come from somewhere else.

Engineers picked the Pearl River, on the other side of Jackson, as that source. The pumping station was erected, the six-mile prestressed concrete steel cylinder pipe line was laid, and 8,000,000 gallons per day started to flow into the lake. In six months the lake was filled.

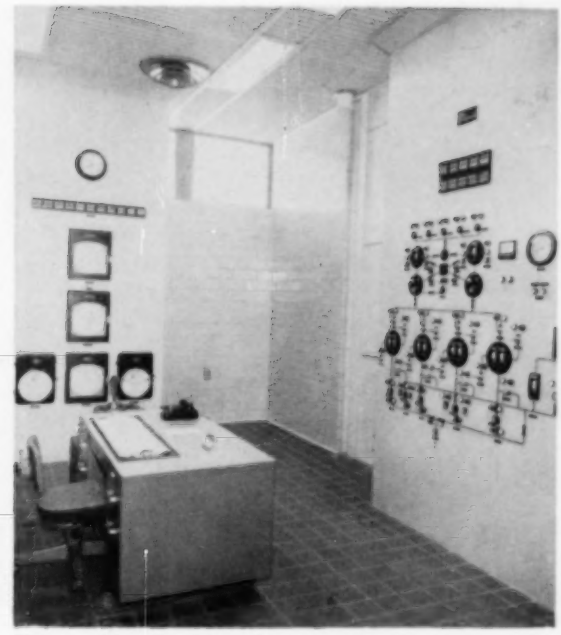
The pumps are turned on or off to maintain the water level and according to Consulting Engineers Michael Baker, Jr., Inc. of Jackson, Miss. and Rochester, Pa., the results have been extremely satisfactory.

Taylor-Wheless Company installed the pipeline. Price Brothers Company, with headquarters plants in Hattiesburg, Miss. and Dayton, Ohio, manufactured the pipe.

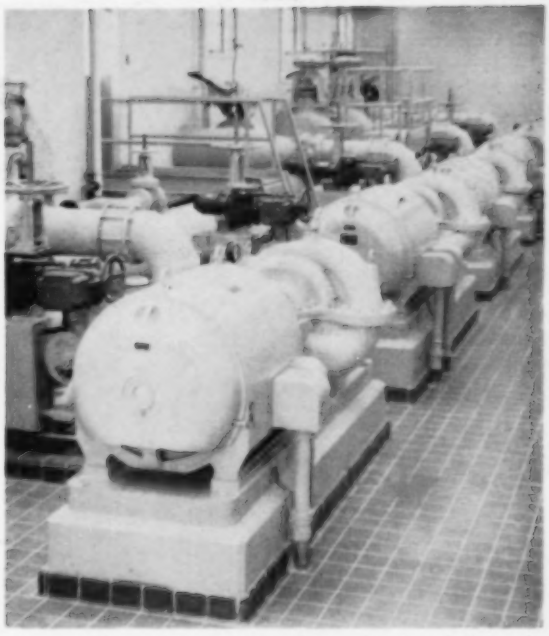
Far left: A trencher was used on the job. Note backhoe picking up pipe.

Near left: The backhoe was used to place the pipe and to pull home the joint.

Price Brothers
CONCRETE PRESSURE PIPE



This graphic control board provides the operator with all the data necessary to run the plant.



High-service pumps take suction directly from the filters, thus acting as rate-of-flow controllers.

(Continued from page 165)

between the two independent sections of the plant, each rated at 6.0 mgd. It also provides sufficient aeration to remove the small amount of hydrogen sulphide present in the water.

Each half of the plant contains one contact basin, one settling tank and two filters. First the water enters a 70-foot-diameter-by-19-foot-deep steel tank equipped with a Graver Reactivator water-conditioning unit. A fresh lime slurry is mixed with the incoming water, along with recirculated, partially spent lime sludge, within the truncated conical area of the conditioning unit. An Omega slaker in the Operations-Control Building prepares the lime slurry. The flow is down through the center portion, up the outer portion of the tank into perforated launder pipes extending across the tank. Rakes revolving around the bottom of the tank shell collect the settled sludge which is then lifted by a seven-foot diameter impeller and mixed with the water. Blow-down equipment permits discharge of spent sludge to the adjacent river bank or into lagoons.

We make no attempt to maintain a sludge-blanket, and if precipitated matter carries over, it settles out in the settling tank.

The settling tank, also of steel, measures 100 feet in diameter and 19 feet deep. Dorrco center-drive clarifier equipment brings settled material to the center of the tank for periodic removal by flushing to the river or lagoons.

We add chlorine, in amounts sufficient to permit a residual in the filter effluent, to the water as it flows from the contact tank to the settling tank. This is done by means of Fischer & Porter equipment. The plant also contains two anhydrous ammonia feeders but the raw water contains enough natural ammonia to give a chloramine residual.

No Clearwell

The filters, two for each side of the plant, are designed for a filtering rate of three gallons per square foot per minute. The 30-foot-diameter-by-14-foot-deep steel tanks have a false steel floor supported by vertical struts that allow 2⅔ feet storage space beneath each unit. The false floor has 564 stainless-steel umbrella-type filter heads of General Filter Company design. Thirty-six inches of graded gravel and sand lie above the floor. Four steel wash-water troughs extend completely across the unit and each filter has six Palmer surface sweeps.

The plant has no clearwell. Filtered water flows through 24-inch suction piping to each of the four DeLaval high-service pumps. This serves the dual purpose of wash-water header and pump suction header, if desired. Since the wash-water header is connected into the suction of each pump for the purpose of backwashing the filter, it is possible to take suction from any filter through this header. In order to firm the pumping capacity of the plant, a fifth DeLaval high-service pump is connected to the washwater header so that it may also take suction from any of the four filters.

A low-head, 2,100-gpm turbine-type pump connected to the wash-water header pumps treated water into the 440,000-gallon Pittsburgh-Des Moines standpipe. The water in this 63-foot-high tank is used for filter washing only. Washwater flows to a reclamation lagoon from which it can be repumped to the plant by a 900-gpm turbine pump. The two lagoons are 0.8 and 1.9 acres in size.

We feel the proper place for treated-water storage is on the distribution system and not at the plant. Our company has designed and constructed 5,100,000 gallons of storage at five strategic locations on the distribution system—about equal to the demand of an average day. Four-million-gallons are in ground storage reservoirs, while booster stations are used to meet peak demands in special areas.

Pumps, rather than rate-of-flow controllers, control filtering rate. Since there is one 3.0-mgd high-service pump connected to the bottom of each filter, this rate is main-

(Continued on page 171)

Rugged, every inch of the way

Cast iron pipe was made for tough jobs such as sewage disposal. It resists attack by sewage and sewage gases that require expensive linings in other types of pipe; it keeps sewage flowing smoothly.

Cast iron pipe performs a tough job. It stands up to external and internal loads, shocks and pressures. Bottle-tight joints *eliminate* seepage and infiltration at the most vulnerable points of your system.

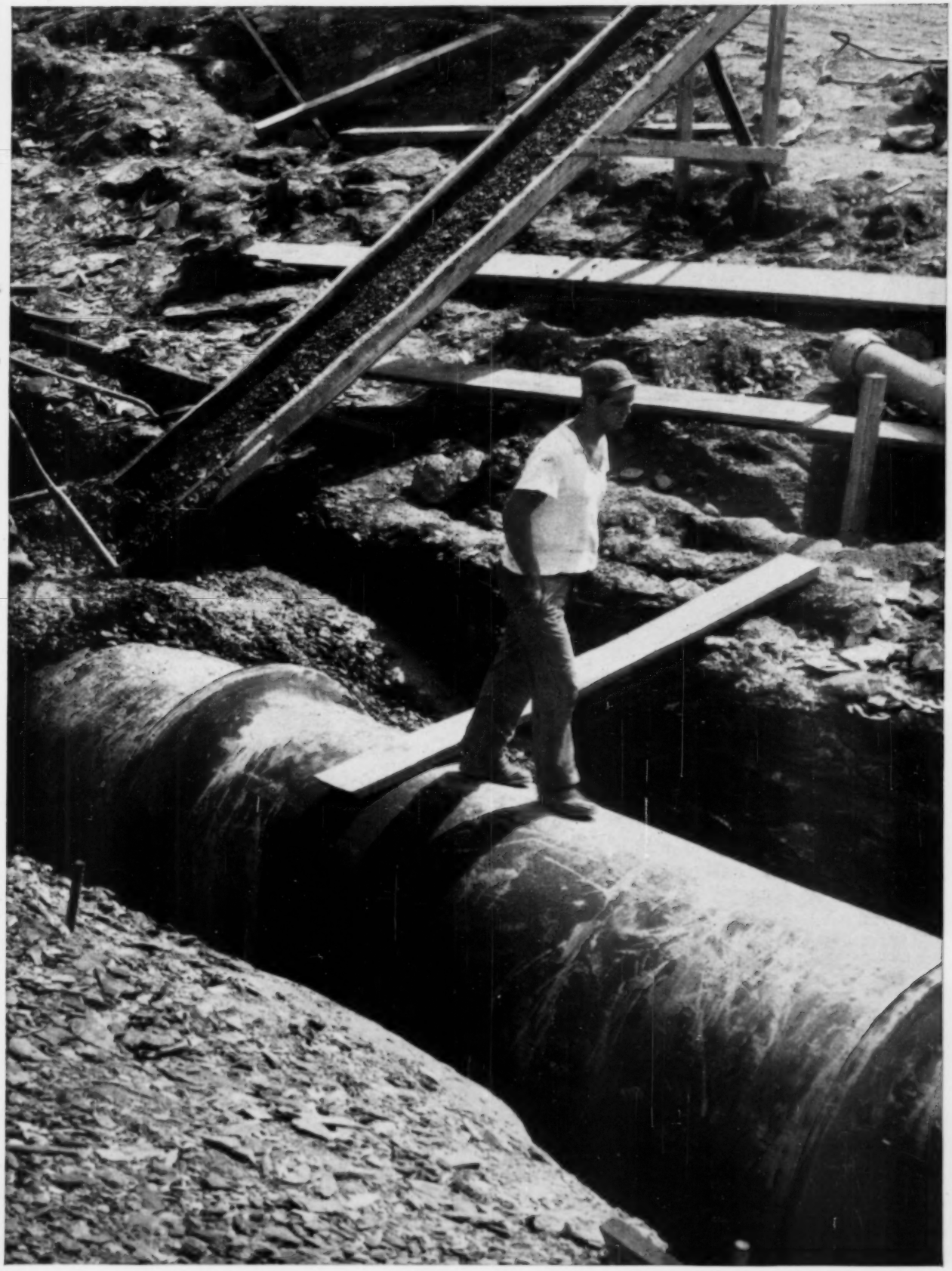
Cast iron pipe is rugged every inch of the way . . . and will remain so for over a century.

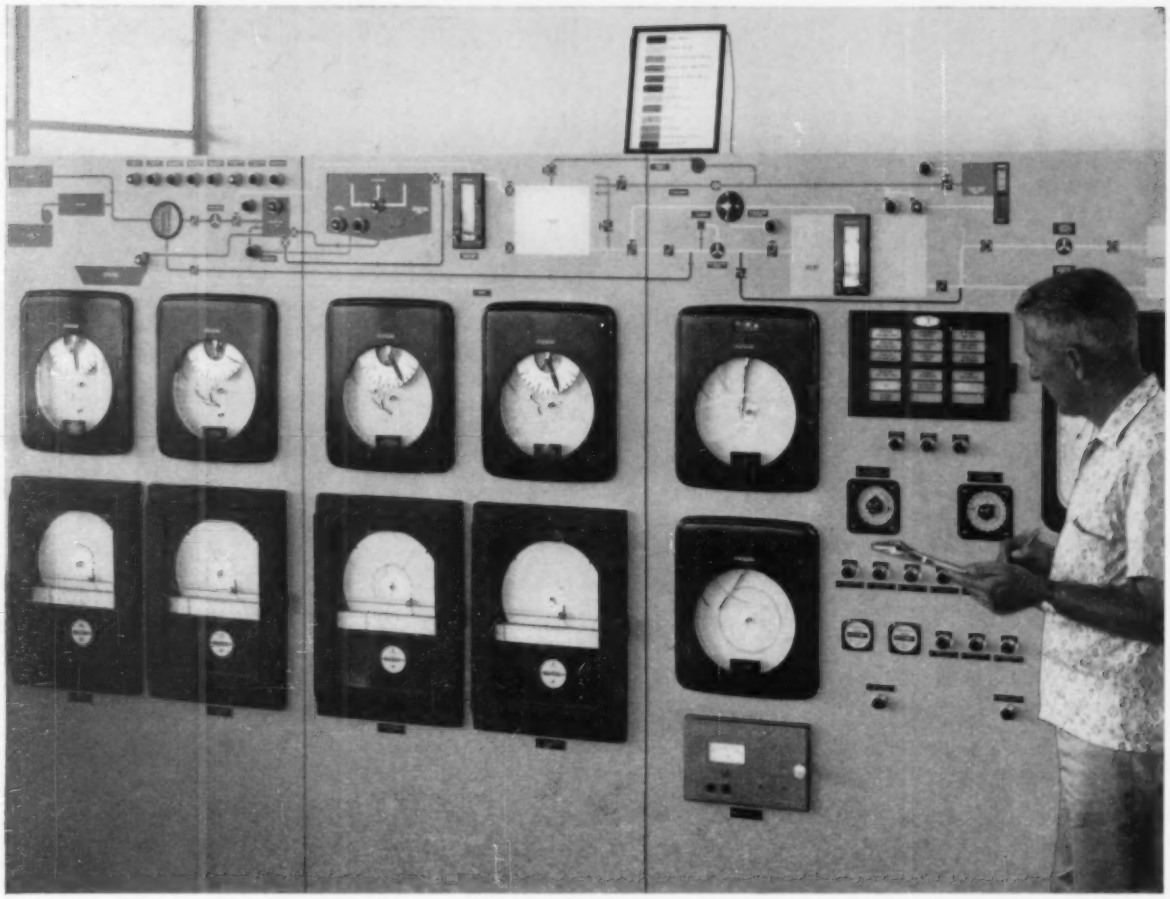
CAST IRON PIPE

THE MARK OF PIPE THAT LASTS OVER 100 YEARS

CAST IRON PIPE RESEARCH ASSOCIATION

Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois





"We're finding Foxboro Instruments remarkably accurate, dependable, and free from maintenance"

Marin Municipal Water District San Rafael, Calif. reports

Winter rains washing mud into supply lakes posed a difficult problem for the Marin Municipal Water District. To insure best possible operation of their Bon Tempe Filtration Plant, special attention to chemical addition and filtering was imperative.

To Foxboro instruments went the job of keeping the entire operation under control. "One glance at our central Foxboro control panel, and we know the status of our whole plant," the Chief Engineer reports.

Foxboro pneumatic instruments record and control flow, level, and back wash rate for each of the four rapid sand filters, while a Foxboro Dynalog* electronic recorder continuously charts pH of the treated water.

Since the plant was started in 1959, it has run continuously under this complete Foxboro control system. It has never had a shutdown due to instrument failure.

Accurate, dependable, maintenance-free — Foxboro instrumentation can help you run your plant more efficiently, too. Ask your nearby Foxboro Field Engineer to show you how. Or write for bulletin 1-15. The Foxboro Company, 956 Neponset Ave., Foxboro, Mass.

Reg. U.S. Pat. Off.

Foxboro-instrumented Bon Tempe Filtration Plant, San Rafael, California. Plant was built to serve the burgeoning population of the Marin Municipal Water District. Kennedy Engineers, San Francisco, were Consulting Engineers.

FOXBORO

REG. U.S. PAT. OFF.

(Continued from page 167)

tained without the necessity of a rate-of-flow controller. Driven by 350-hp motors, pumps are rated at 2,100 gpm against a 473-foot head.

Discharge is through a 24-inch steel pipe header and then through a 26,500-foot-long, 30-inch-diameter Lock Joint pressure-pipe transmission line. The line contains four 20-inch flanged ball-type main line valves, 11 air release valves and ten six-inch blowoffs. Distribution service lines receive water from this transmission line.

The "heart" of the plant is located directly off the entrance to the two-story, reinforced-concrete operations-control building. This is the control room, containing all the charts and indicators needed by the operator to run the plant. A Fischer & Porter control-indicating panel of graphic-layout design makes it easy for the operator to check each section of the plant.

The building houses the pump room, chemical storage bins, chemical feeder rooms, office, laboratory, shop and a 20½-by-19½-foot lecture room. Electrical switchgear, pump controllers, and other outdoor electric equipment are on the roof just above the machine-shop room. An elevated steel walkway leads to the plant inlet, basins and filters.

Pebble quicklime for iron removal and softening and liquid chlorine for bacterial control constitute the only chemicals used. We do not recarbonate. Stabilization is effected largely by use of heavy sludge concentration in the reactivator unit. We have experienced very little sand incrustation and algae problems have been minimized by the liberal use of chlorine added to the water entering the settling tanks. Freezing is no problem since the well-water temperature ranges from 56 to 58 degrees throughout the year.

A combination of enclosed bucket and screw conveyors transfers the pebble lime from truck to storage to the slakers, thus avoiding a dust problem. Chlorine is stored in ton containers on an open rack adjacent to the plant.

By using pebble lime at the rate of 1,900 pounds per million gallons and chlorine at 18.7 pounds per million gallons the plant produces an excellent, palatable product of about 90-ppm hardness and 0.02 ppm iron from raw water containing an average of 300-ppm hardness and 8.8 ppm of iron.

Pleasantly landscaped, the plant grounds include blacktopped access drives and parking places. It is floodlighted for night operations. ◄◄

KENNEDY

Swing Check Valves are Built to *Last Longer*, provide leak-proof seal

Iron-Body, Bronze Mounted with Bronze Faced Disc or Rubber Disc

Sizes: 4" through 12"

Working Pressures: Cold Water 200 lbs.

Fig. 106

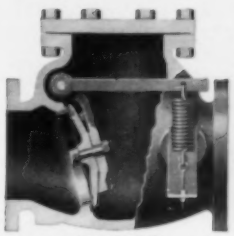


Fig. 106LS
Cutaway view showing disc with external view of lever and location of spring.

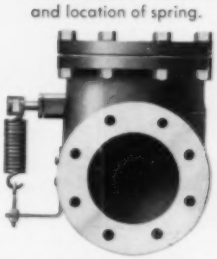


Fig. 106LS
Exterior view showing spring and method of mounting on the valve body.

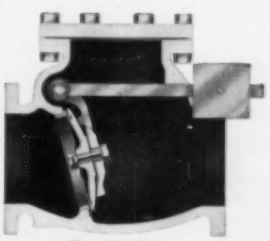


Fig. 106LW
Interior view of disc showing attachment of lever with exterior view of weight.

These valves prevent backflow and provide a leak-proof seal with rubber disc. They may be installed in horizontal or vertical position with upward flow.

When more positive control of the disc is needed, valves may be supplied with either a lever and spring or a lever and weight. Either can be adjusted to exert the required pressure on the disc when the valve is in operation.

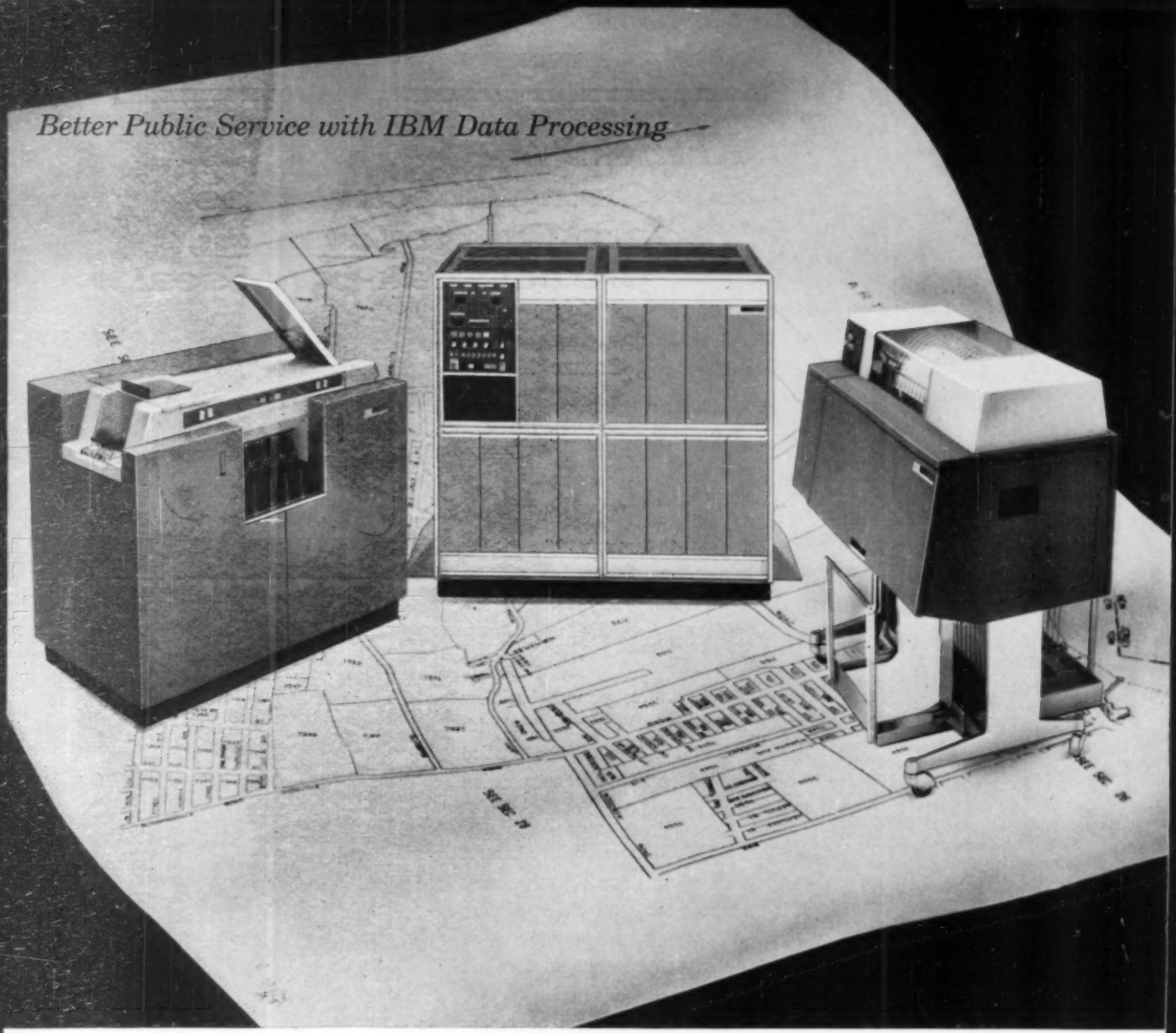
• *Write today for complete details.*

***NOW* Available . .**

The new KENNEDY A.W.W.A. Maintenance Manual . . . giving detailed information. For your copy write today on your letterhead.

KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS
• OFFICES AND WAREHOUSES IN NEW YORK, CHICAGO, SEATTLE, SAN FRANCISCO, ATLANTA • SALES REPRESENTATIVES IN PRINCIPAL CITIES •

Better Public Service with IBM Data Processing



Complex tax procedures become simple routines ...with the IBM 1401 Data Processing System

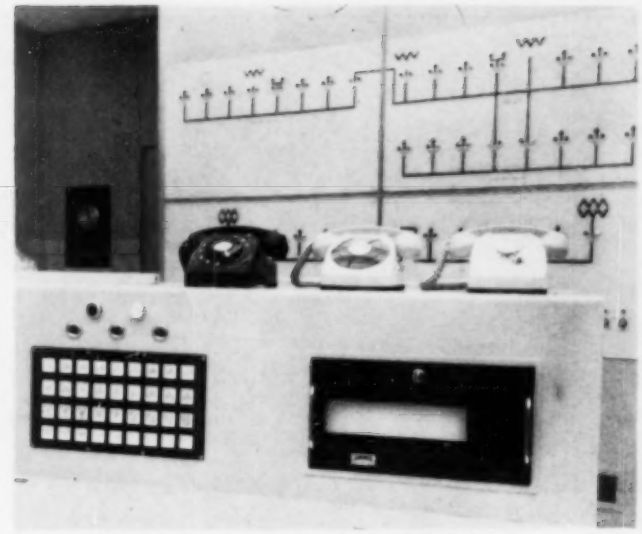
You cut accounting costs...smooth out your work load...build public confidence when the low-cost IBM 1401 brings the speed and accuracy of electronics to your tax accounting.

The 1401 eliminates many time-consuming, repetitive steps in your tax accounting procedures. This modern data processing system accurately maintains and quickly updates the assessment record. It automatically applies the tax rate against the assessed evaluation and prints out the tax rolls and tax bills.

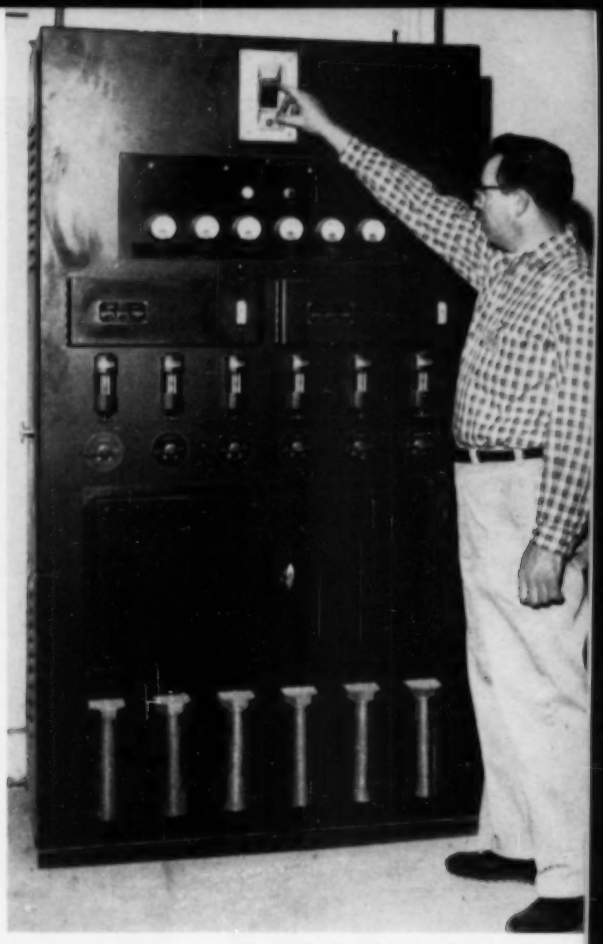
In addition, the versatile 1401 also gives you a working tool for scientifically computing assessments. After combining the property description with all the predetermined factors affecting the land and improvement values, it automatically computes the assessed valuation. It's simple...efficient...fast.

Get full details on how a small monthly investment can simplify your accounting procedures and help you give better service to your community. Call your IBM Representative today.

IBM®
DATA PROCESSING



The control desk also includes a fire-station indicator (left) and a four-circuit console recorder.



This carbon-monoxide-analyzer system samples air received continuously from ten locations.

Safety Conscious Convention Hall

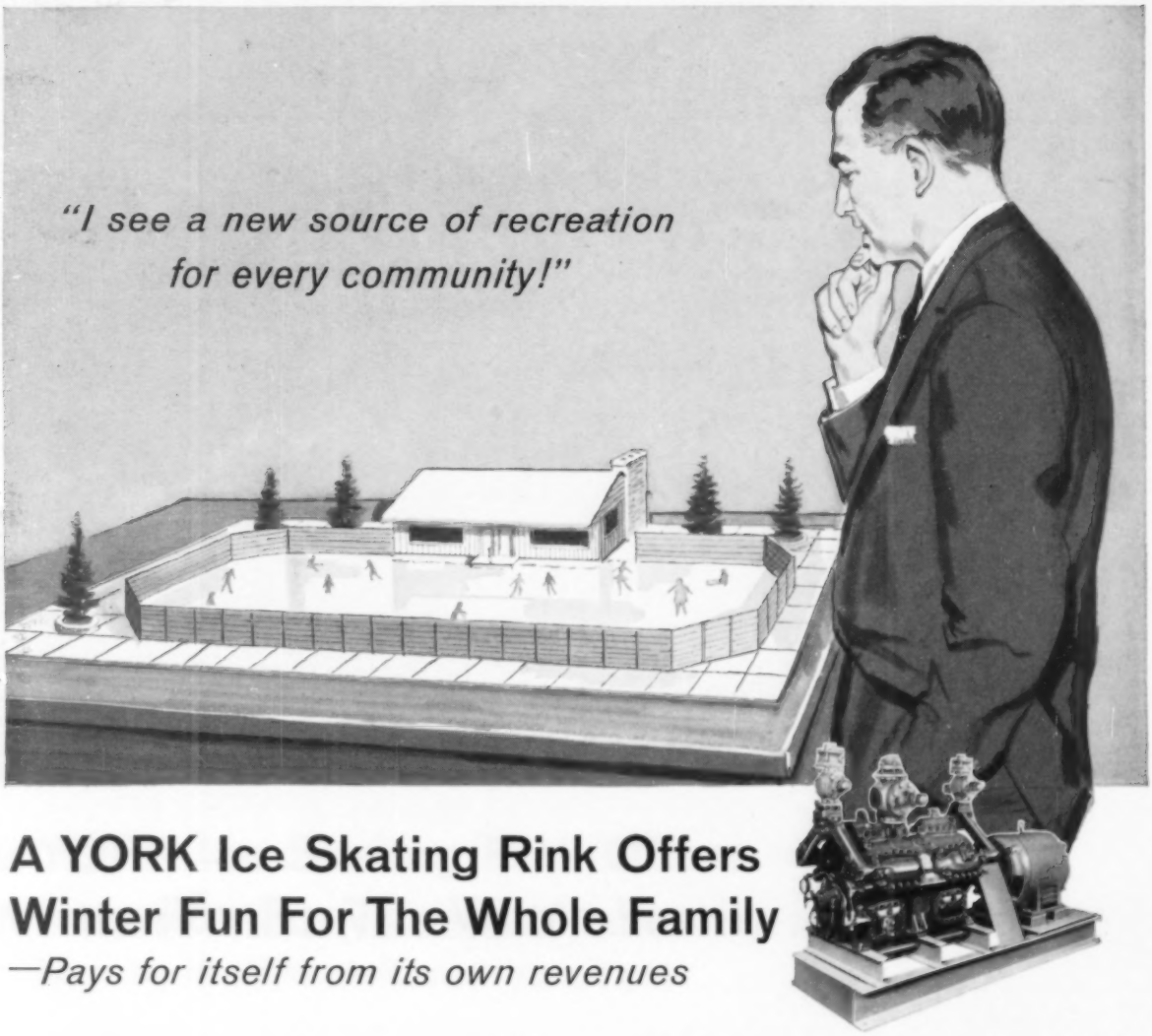
Detroit's Cobo Hall, focal point of water-works men from all over the nation this month, in many respects is a city in itself. It dominates 17 acres of the recently developed City Center. The facility includes more than 1,500,000 square feet of usable space; under-floor cables carrying 10,000 kva of electrical power; parking space for 2,174 passenger cars; a telephone system capable of serving a community of 8,000 people; and water and sewer systems that could service a city of 70,000 people.

Safety plays a vital role in the operation of such a facility, and Cobo Hall has more than adequate provision for the protection of the buildings and their occupants.

A 1,150-car roof deck, a 606-car underground garage in the hall, inside parking space for 400 cars to serve the adjacent arena, and the John C. Lodge Expressway tunnel under the north end of the main building require an extensive ventil-

(Continued on page 175)

Above is downtown Detroit, the hub of the 400-square-mile area served by the Department of Water Supply; Cobo Hall, the city's new civic center appears in the foreground; the downtown business and financial district is on the left and the Detroit River, the source of supply for the entire metropolitan water system, separates Detroit from Canada on the right. The AWWA will utilize the facilities of Cobo Hall for its 1961 annual convention, June 4th to 8th.



A YORK Ice Skating Rink Offers Winter Fun For The Whole Family

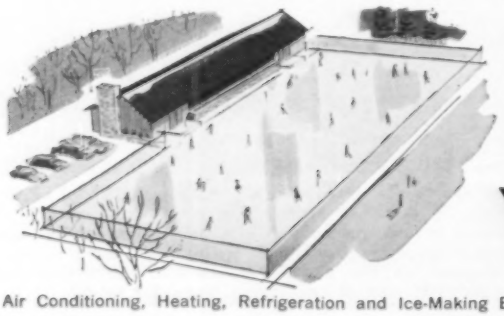
—Pays for itself from its own revenues

POPULAR, FAST-GROWING SPORT—Americans have really taken to the ice! Skating is recognized as a healthful, outdoor winter activity for people of all ages. Today, ice rinks are found all over the U.S., and 90% of all skating is done on *man-made* ice.

PROVIDES WINTER RECREATION PROGRAM—Many communities have installed York Ice Rinks to complement swimming pool facilities, creating year-round recreation. With York equipment freezing the ice, you get 5 months of uninterrupted skating.

FINANCE WITHOUT TAXES—Municipalities need not raise taxes to build an ice rink. It can be financed from bonds issued by a non-profit corporation, specially formed for that purpose. Bonds are paid off from rink admission fees, skate rentals, concessions.

YORK EXPERIENCE AT YOUR SERVICE—York offers refrigeration equipment for any ice rink application. York, with 75 years' experience, also offers valuable engineering help, and York Certified Maintenance assures peak equipment performance year after year.



Another York Trail Blazer Concept Proved in Action At *Municipal Ice Rink, Greenville, Pa.*—This town of 10,000 people built a $70,000 outdoor ice rink and warming house that was completely financed without taxes. Dependable York equipment keeps the ice frozen, assuring months of perfect skating. Write York for complete details of the "Greenville story."

YORK CORPORATION
Subsidiary of Borg-Warner Corp.
YORK, PENNSYLVANIA
1706 SOUTH GRANTLEY ROAD, YORK, PENNSYLVANIA

Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Applications

(Continued from page 173)

ation and carbon-monoxide control system.

The carbon-monoxide alarm system guards against possible build-up of carbon monoxide in the underground parking areas. A Mine Safety Appliances carbon-monoxide analyzer system receives continuous air samples drawn from the ten locations, six in the hall garage and expressway tunnel and four in the arena garage. The analyzer oxidizes the carbon monoxide to carbon dioxide and by means of a differential thermopile and the resultant electrical signal, measures the released heat, which is proportional to the carbon-monoxide concentration. The graphic recorder automatically actuates visual and audible warning signals and ventilation controls. The controls are set to sound alarms when the carbon-monoxide content of the sampled air exceeds 200 ppm.

Superintendent of Building Maintenance Joseph B. Vinckevleugel explains the various operations of the system as follows:

- **The detection of 75 ppm carbon monoxide from any sample point automatically turns on half the fans in the area of detection.**
- **An increase in carbon-monoxide content at any sample point to 100 ppm causes all exhaust fans in the area to operate. The fan control system includes a time-delay relay that keeps fans operating two minutes after the carbon-monoxide level drops below 75 ppm.**
- **The detection of 100 ppm carbon monoxide at either of two sample points in the expressway tunnel starts all fans on one level of the exhibits-building garage. Should the carbon-monoxide content rise to 150 ppm all the fans on the second level also go into operation. The fans again operate for two minutes after the carbon-monoxide level falls below 100 ppm.**

Should either sample point in the expressway tunnel report 200 ppm carbon-monoxide content, the M-S-A alarm sounds in the control room. The operator, by means of toggle switches, then activates the exhaust fans on both upper and lower levels of the hall garage, along with the required supply fans.

Fire Protection

Safety provisions against fire include both a warning system and fire-fighting equipment. For example, 105,000 feet of pipe and 5,333 nozzle heads form a sprinkler system covering all parts of the hall and arena, including the escalators. There are 100 feet of inside hose and a 2.5-gallon-capacity fire extinguisher at each of 115 strategic locations throughout the structure.

A Gamewell fire-alarm system offers further fire protection. Basically the system consists of:

a. An automatic voltage regulated power supply, a special relay cabinet and a four-circuit console recorder (built into a control desk) located in the control room.

b. Thirty-two manually operated and seven automatically operated fire-alarm boxes located in the main building. Each automatically operated master fire-alarm box is connected to an associated sprinkler system.

c. Fourteen manually operated and two automatically operated fire-alarm boxes located in the arena section.

The city ran two special fire-alarm circuits from fire-alarm headquarters to Cobo Hall. One circuit connects the perimeter and exterior boxes while the other circuit connects to all interior boxes. The console recorder, in conjunction with

(Continued on page 177)

sure cure for Mysophobia*

*mysophobia (my" so-pho' bi-a) *n. Pathol.* 1. dread of dirt. Common among public works officials charged with good housekeeping in municipal parking lots, garages, on sidewalks around civic centers and parks, in sports areas, equipment yards, warehouses—wherever large Wayne *street* sweepers can't operate. Attempts to use old-fashioned pushbroom methods and costly manpower only aggravate condition. Cure invariably effected with Wayne *Power* Sweeper of proper size. Ease of operation, large hopper capacity, job to job portability, and savings in manpower and time, *plus improved civic cleanliness* with a Wayne have great calming effect. Prescription without charge obtained by writing direct to Wayne. Distribution, parts and service everywhere.

WAYNE

WAYNE MANUFACTURING CO.
3712 E. LEXINGTON ST., POMONA, CALIFORNIA

Please send me a copy of your Power Sweeper brochure

Name_____

Title_____

Address_____

Seal Coating with Cationic Bitumuls produced uniformly fine results in spite of early showers

CATIONIC BITUMULS SPEEDS SEAL COATING IN TACOMA

The City of Tacoma, Washington, has two major sources of street maintenance problems. First, some forty miles of very old (1890-1915) sheet asphalt surfaces. These are now badly cracked and extensively patched. Second, several hundred miles of streets that have only a light bituminous treatment. The ever-increasing traffic load is starting to cause trouble on these.

In the past, the City has settled for continuous patching on the sheet asphalt; and Seal Coating of the light bituminous arterials, using either anionic emulsions or cutbacks. The Seal Coating required closing the streets to traffic for long periods; and weather was a constant threat, restricting the work seasonally.

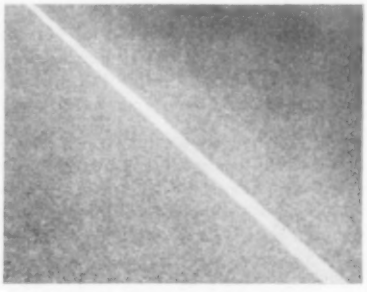
City maintenance forces were quick to see two major advantages of Cationic Bitumuls when it was first introduced. A—This material had a natural affinity for the cover aggregate being used. B—The rapid-setting characteristics sharply reduced the danger of "wash-off" from rain. (When showers actually occurred within two hours of job completion, there was no damage!)

Based on earlier work the City was able to "field" a well-integrated Seal Coating team. Cationic Bitumuls sets rapidly so that Seal Coating operations were co-ordinated even more closely. Both the cover-stone truck and the pneumatic roller could follow very closely behind the distributor!

The Seal Coating operation has now been extended to the "ancient" sheet asphalt pavements. Here it prevents the break-up action that made earlier patching necessary.

Using Cationic Bitumuls, streets are closed to traffic a much shorter time; and the work season begins much earlier in the year.

Discover for yourself the ability of Cationic Bitumuls to extend the work season; and to coat and hold most aggregates—even those normally regarded as "difficult". Bitumuls Engineers in our nearest office will supply full information; and will arrange for you to see a Cationic Bitumuls job in your area.



Close-up view of a Cationic Bitumuls Seal Coat. Note uniform cover-stone retention

American Bitumuls & Asphalt Company

320 MARKET ST., SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

(Continued from page 175)

the special relay cabinet, automatically records a coded signal for each actuated fire-alarm box at the same time as the signal is being recorded at the fire-alarm headquarters.

The control room serves as the heart of the facility. By means of a pilot light assigned to each fan, the graphic portion of the main control panel gives an indication of exhaust and supply fan operation. Provision has also been made for manual fan-group operation through three-position (automatic, off, manual) switches located on the control panel.

The panel also includes carbon-monoxide-sampling-pump running lights mounted just below the associated strip-chart recorder. ◄◄

City Attorneys Help to Recover Rigged-Bid Damages

The National Institute of Municipal Law Officers is making a concerted effort to aid member cities to recover any damages suffered on purchases from 29 electrical equipment makers due to the rigged-bidding conspiracy revealed in the recent Federal anti-trust cases in Philadelphia.

Under direction of its chairman, John C. Melaniphy, corporation counsel of Chicago, a NIMLO task force has been mapping strategy on how to proceed in covering city losses directly resulting from overcharges on electrical equipment.

The task force has stressed that recovery of damages is not automatic and will depend entirely on the facts dug out by each city. Cities that collect the facts which prove damage will recover; those that do not will not recover.

Significant developments in the price-fixing affair in other areas include the following:

- **The Justice Department filed six more damage suits in Philadelphia on April 11th against 11 electrical equipment manufacturers.**
- **The Water and Power Department of Los Angeles has voted to file damage suits that may total nearly $23 million against the electrical-equipment makers cited in the federal government's February anti-trust prosecution in Philadelphia.** ◄◄

Modern Waste Disposal
DEMANDS
MODERN INCINERATORS

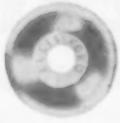
You tell us—
We'll tell you—

Tell us the population of your area. We'll tell you frankly why incineration is the best answer to your waste disposal problem . . . the type and size incinerator needed . . . Approximate construction and operating costs. No obligation.

INCINERATORS BY
MORSE BOULGER, INC.
Today's Engineering Backed By More Than 70 Years' Experience

80 Fifth Ave.
Dept. 20-A, New York 11, N. Y.
WA 9-8000 • Representatives Everywhere
MEMBER
Incinerator Institute of America
Air Pollution Control Association

Ellis Heavy Duty Pipe Cutters For Pipe Up To 16" Dia.



With Long Lasting Cutter Wheels

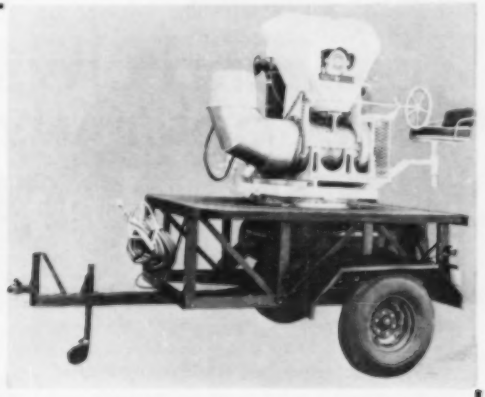
Designed for water works men who appreciate the rugged construction of drop-forged frame and links; and a tool that assures no pipe breakage, no re-cutting and no spoilage.

THREE SIZES
No. 01 for 4" to 8" Pipe
No. 1 for 4" to 12" Pipe
No. 1B for 4" to 16" Pipe

write today for free literature

ELLIS & FORD MFG. CO.
1100 COOLIDGE RD.
BIRMINGHAM, MICH.

THE ALL NEW
Buffalo Turbine FST-1

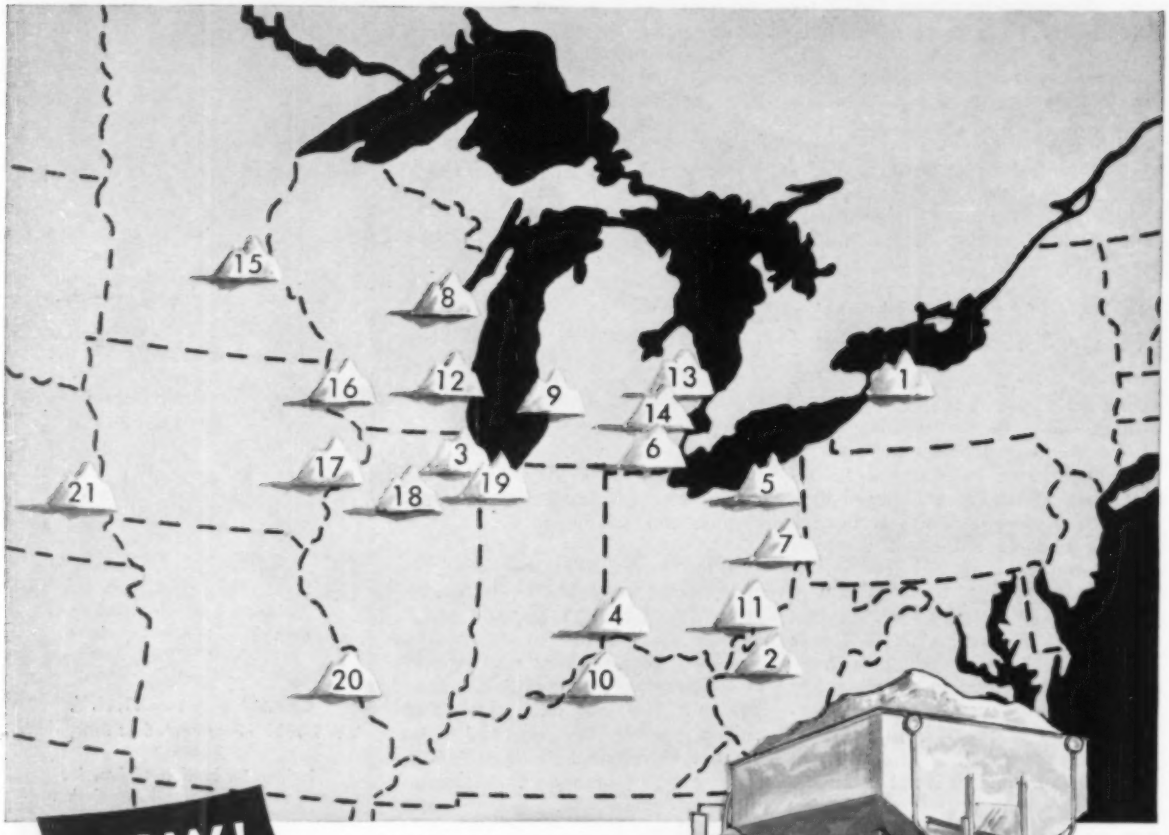


BRINGING YOU THESE FINE FEATURES:

- 100 Gallon Stainless Steel Tank.
- High Pressure Piston Type Pump.
- Full 360° Turntable Rotation of Unit.
- Handles Dust and Granulas.

BUFFALO TURBINE
Agricultural Equipment Co., Inc.
69 Industrial Street
Gowanda, New York

Write For Free Descriptive Literature



NOW!

DIAMOND CRYSTAL SALT COMPANY'S

NEW ROCK-SALT DEPOTS

offer fast, economical service for snow & ice removal salt

With storage depots strategically located (see keyed map) throughout the snow and ice belt, Diamond Crystal Salt Company can supply all your salt requirements in the shortest possible time. Be sure—play it safe—call your nearest Diamond Crystal sales office for fast service.

1. Buffalo, New York
2. Charleston, West Va.
3. Chicago, Illinois
4. Cincinnati, Ohio
5. Cleveland, Ohio
6. Detroit, Michigan
7. East Liverpool, Ohio
8. Green Bay, Wisconsin
9. Holland, Michigan
10. Louisville, Kentucky
11. Marietta, Ohio
12. Milwaukee, Wisconsin
13. Port Huron, Michigan
14. St. Clair, Michigan
15. Minneapolis, Minn.
16. Prairie du Chien, Wis.
17. Davenport, Iowa
18. La Salle, Illinois
19. Michigan City, Ind.
20. St. Louis, Missouri
21. Omaha, Nebraska

Diamond Crystal Salt Company

ST. CLAIR, MICHIGAN

75th Anniversary 1886–1961

PLANTS: AKRON, OHIO; JEFFERSON ISLAND, LA.; ST. CLAIR, MICH.
SALES OFFICES: AKRON • ATLANTA • BOSTON • CHARLOTTE • CHICAGO
DETROIT • LOUISVILLE • MINNEAPOLIS • NEW ORLEANS • NEW YORK

Hanging baskets of daffodils line main streets in Puyallup and Sumner during the Puyallup Valley Daffodil Festival. Volunteer citizen committees in each community assume the responsibility of hanging the baskets and keeping them full.

A Festival Boosts City Economy

Puyallup Valley shows how a festival can boom industry, attract nationwide interest and augment city coffers

By **DON ANDERSON***
Chamber of Commerce
Tacoma, Wash.

If yours is a medium-sized city, it ought to sponsor a gala, bang-up festival. If it does already, it may be well to consider whether you are realizing its full potential. Our Puyallup Valley Daffodil Festival showed us that a local celebration can:

1. Cause the local cash registers to jingle
2. Bring in thousands of outside visitors
3. Promote local color nationally and advertise the things an area has to sell—thus invigorating your economy, and
4. Help build civic spirit.

There are many outstanding examples—New Orleans' Mardi Gras and Pasadena's Carnival of Roses to name a pair of famous ones. But a festival need not cost as these do to serve its purpose.

Our Puyallup Valley Daffodil Festival, jointly sponsored by the cities of Tacoma, Puyallup, Sumner and Orting in Washington state, operates on a total budget of aroun' $20,000 yearly. Yet we attracted a quarter of a million visitors April 6th to 12th, 1960, during our 26th annual festival.

City officials of Tacoma, Puyallup and Sumner go all out in making the festival a success, beginning with the coronation and selection of the queen in Sumner during the first night of festival and extending through the entire week. Puyallup's city administration makes its municipal recreation building available to the festival for the flower show for just custodial costs, while the Tacoma authorities loan bleacher seats and manpower to erect them for parade day.

Parade day! Then the police departments of all three cities function at their best; it's their efficient handling of the crowds and the traffic that makes our floral street parade click like clockwork. Right on the dot of ten o'clock Saturday morning the parade starts in Tacoma, then re-forms outside Puyallup for a 1:30 p.m. start, and repeats through Sumner beginning at three o'clock. Really three parades the same day, and the fact that each moves without a hitch is due to tri-city police efficiency. Last, but far from least, is the gorgeous float that Tacoma City Light provides each year for the queen and for the princesses.

The festival increases overall business activity in our valley by about 20% for its duration. In 1958, bank clearings in Tacoma jumped from $78,442,000 in the week preceding the festival to $116,659,000 during the week of the celebration! And they remained high, at $91,443,000, during the week following.

Moreover, various news media carried the story of the Washington State daffodil blossom and bulb industry to national markets. Requests for information about the 1959 festival came from 40 states.

We feel we are well paid, indeed, for the $20,000 expended. Funds are raised by selling patron memberships, $1 "Booster Buttons" and individual and Chambers of Commerce donations.

Promotion Needed

How does the medium-sized city make a national event of its own local celebration? Promotion is the answer and costs can be modest.

Our total publicity and promotion cost for the festival is about $4,000.

(Continued on page 183)

* Mr. Anderson also is a member of the board of directors, Puyallup Valley Daffodil Festival.

MICROFILMS UP TO 500 ITEMS PER MINUTE! New RECORDAK RELIANT 500 Microfilmer—in one continuous operation—automatically feeds your office records . . . photographs one or both sides at once . . . indexes the film images . . . even endorses, cancels or face-stamps originals with accessory endorser. Also, a "twin" roll of film can be exposed simultaneously for off-premises security.

Film units can be interchanged in seconds, which allows various departments to use the same microfilmer and *still keep their records separate.* It's almost like getting extra microfilmers for the cost of extra film units.

DATA HANDLING . . AND RECORDAK

Meeting today's tough record-

ANY MICROFILMED RECORD OUT OF MILLIONS VIEWED IN 20 SECONDS! New RECORDAK LODESTAR Reader turns on automatically when you insert magazine containing thousands of microfilmed and indexed pages of office records, catalog information, or decoded computer data. No threading. No adjustments. No handling of film—ever!

Fast as the RECORDAK LODESTAR advances your film the index lines are easy to follow . . . lead right to the pictures you want. On-the-job tests show that it actually takes less than 20 seconds to retrieve—and view—any record out of the millions which can be kept within arm's reach.

TRANSLATES COMPUTER LANGUAGE INTO PLAIN ENGLISH!

New RECORDAK DACOM System produces microfilm images of graphic arts quality from the invisible pulses on magnetic tape at speeds up to 20,000 characters per second. That equals or exceeds computer speeds . . . is many times faster than mechanical printers. The information decoded from as many as eight 2,400-ft. reels of magnetic tape fits on one 100-ft. roll of 16mm RECORDAK Microfilm, measuring only 4" x 4" x 1".

RECORDAK DACOM System is incredibly versatile—optically combines computer data with any office form design . . . gives you, for example, a complete customer statement on a single film image, from which a paper print can be made. Also, it provides fastest, most accurate method of point plotting, and logic diagramming of electronic circuits.

handling problems head on!

New From RECORDAK! Streamlined new equipment . . . incredible new systems . . . entirely new concepts in handling everything from office records to computer tapes.

Even in the brief picture-captions on these pages you will find some (perhaps many) suggestions for more economical handling, storage, and retrieval of the records you use daily. And there's much more to the RECORDAK story!

Free literature . . . and a cordial invitation

Send for booklets describing ☐ RECORDAK RELIANT 500 Microfilmer; ☐ RECORDAK DACOM System; ☐ RECORDAK LODESTAR Reader; ☐ RECORDAK Precision Engineering Drawing System.

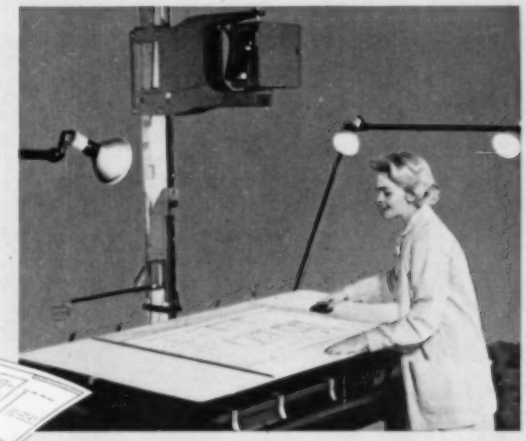
Better still, accept our invitation—have a Recordak Systems Man stop by to discuss your specific record-handling problems. No obligation! Write Recordak Corporation, 415 Madison Ave., New York 17, N. Y.

RECORDAK®

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming
—now in its 34th year

IN CANADA contact Recordak of Canada Ltd., Toronto



DECKS OF MICROFILM CARDS REPLACE BULKY DRAWING FILES! The RECORDAK Precision Engineering Drawing System gives you drawings-in-miniature on low-cost 35mm RECORDAK Microfilm which more than meet DOD specifications. Smallest details are extremely sharp, backgrounds are remarkably uniform even when drawings and prints of every type and age are microfilmed.

Mounting these superb film-images in file cards gives you a complete drawing file which can be kept at the finger tips . . . ready for instant viewing in RECORDAK Film Reader. Ends waiting for reference blueprints . . . cuts blueprint costs. Whenever needed, facsimile prints—or duplicate film cards—can be made directly from the master cards.

1. Leak proof
2. Vermin proof
3. Insect proof
4. Gas proof
5. Oil proof
6. Barnacle proof
7. Fire proof
8. Weather proof

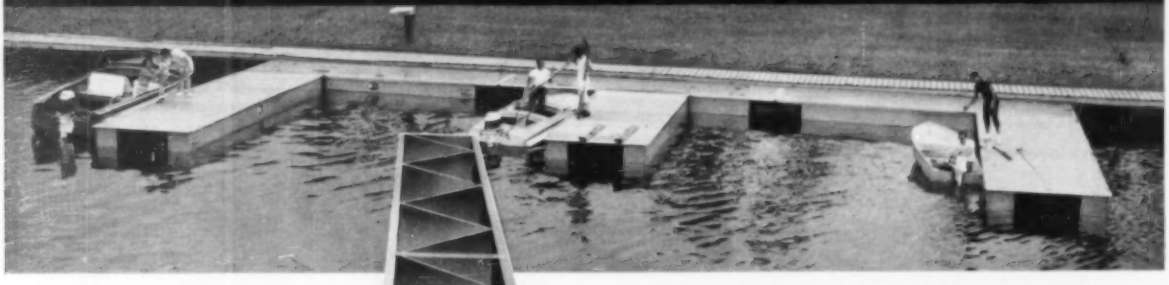
VERSATILE . . .
can be used single or double (illustrated) as finger piers, or in multiple units for larger installations.

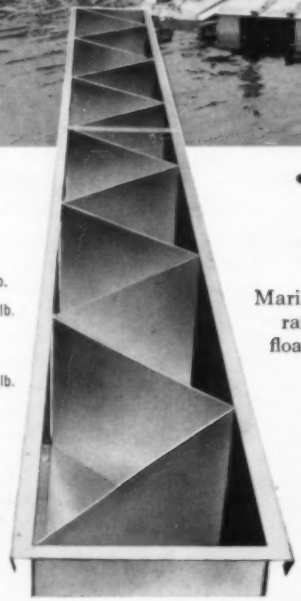
NEW! LIFETIME SALT-WATER PROOF

AluMarine Pontoons

. . . stronger for every application!

MADE BY THE MAKER OF FAMOUS MERCURY OUTBOARD MOTORS!





AluMarine Pontoon Specifications

Dimensions: 20"x20" by	15'	20'	26'
Gauges	.063	.077	.090
Approximate Weight	165 lb.	260 lb.	365 lb.
Maximum Flotation capacity with full immersion (0" freeboard)	2400 lb.	3200 lb.	4100 lb.
Flotation capacity with 10" of freeboard (provides overload safety factor of 2)	1200 lb.	1600 lb.	2050 lb.

Inquire on your letterhead for more information!

Kiekhaefer Corporation
Special Products Division No. 3
P. O. Box 608, St. Cloud, Florida

- **Specially-designed detachable bow sections available to convert pontoons into easy-planing floats for pontoon cruisers, houseboats and barges.**
- **Easy-off access ports make pontoons useful for fluid storage; permit removal of condensation.**

Marinas, floating boat and ski docks, boat slips, swimming rafts, houseboats, workboats, pontoon cruisers, bridges, floating drydocks . . . these are some of the limitless applications for new AluMarine Pontoons. Formed into one piece "U" section from durable salt-water proof aluminum alloy. The cover bolts on to form hermetically sealed rectangular tube. Pontoons are further strengthened with internal point-welded aluminum zig-zag trusses for maximum torsional strength, minimum twist. Ends are heli-arc welded. Write on your letterhead for more information.

(Continued from page 179)

Color is the key to promotion, and we have color. Our daffodil fields blossom gloriously in early Spring. Our publicity director, R. E. Sconce, has operated on the theory that simply releasing the story of the beauty and color of the Daffodil Festival to communications media will bring the publicity and his idea has worked.

Our approach is to supply all news media with photographs, news releases, and feature stories. We produce well-illustrated folders and brochures, and we send our festival royalty to distant cities to invite people to attend.

Shutter Bugs

We also feel that the hundreds of amateur photographers who take pictures at our celebration become walking advertisements for us, wherever their pictures are shown. Accordingly, we make it easy for photographers to take shots of floats, flower show, and of the coronation of the Daffodil Festival queen. The entire queen's court, including the dignitaries present, are held on stage after the coronation for the shutter bugs' convenience. Areas along the parade route are staked off for their use.

The Eastman Kodak Co. has helped us by preparing news releases advising amateurs how to make effective photographs. The company has also given us outstanding photos for our promotional use.

Support

Major department stores have cooperated with Spring Daffodil promotions in which we supply the daffodils—they publicize the festival. The city fathers and businessmen carry our story to meetings and conventions in many cities. When available, they have daffodils to spread around, at head tables, etc.

No means of promotion, of course, can sell a program that isn't lively year after year, so we try to make it memorable every year. We also bolster it with some 40 separate events yearly.

Make no mistake: *this involves work.* Our publicity director, office assistant and part-time help are the only ones paid; others serve without pay.

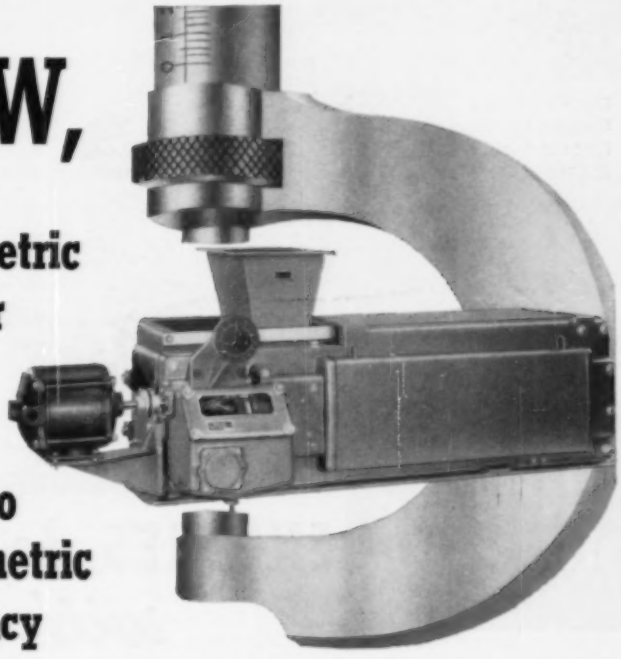
The festival is really a spirited contest and the smaller communities of Puyallup, Sumner and Orting knock themselves out to carry their share of the load. They do just as much as does the big city—Tacoma.

Committees are named for the various areas. The Festival Board, made up of representatives of the Chambers of Commerce, the Growers and the Orting Lions Club, tie everything together.

When the festival was founded, the daffodil industry was a fledgling business in our area. It was born when the hops industry failed. Today we supply one-fourth of the nation's consumption of cut daffodils. Puyallup Valley fields yield from 10,000,000 to 14,000,000 fresh blossom sales annually. This contrasts sharply with a few years ago when blossoms were not even picked. Originally growers felt that to cut the flower weakened the bulb (since disproved). Now, with the advent of air shipment, blossom sales have come to produce almost as much revenue as bulbs. The Festival, we think, has directly affected this development.

We are sure our success could be duplicated by other cities with other things to sell. It takes cooperation, hard work, a civic-minded community and good, intelligent promotion. If these are available, costs need not be astronomical. ◄◄

NOW, a Volumetric Feeder with close to gravimetric accuracy



The New Merchen Volumetric

Now you can feed 3 to 3,000 lbs. of dry materials per minute with clockwork accuracy. The simple belt-and-gate design of the new Merchen Volumetric assures constant, uniform delivery. You get feed rates held within ±3% over any one-minute period.

The Merchen Volumetric has 9″ or 18″ belts . . . handles 0.1 to 2660 cu. ft. per hour. Feed rate is adjustable over 10:1 range. Simple gear changes increase capacity. Special gears can increase range to 1000:1.

Both sizes feed powdered or granular materials without a hitch. Lumpy materials reduce ranges only slightly.

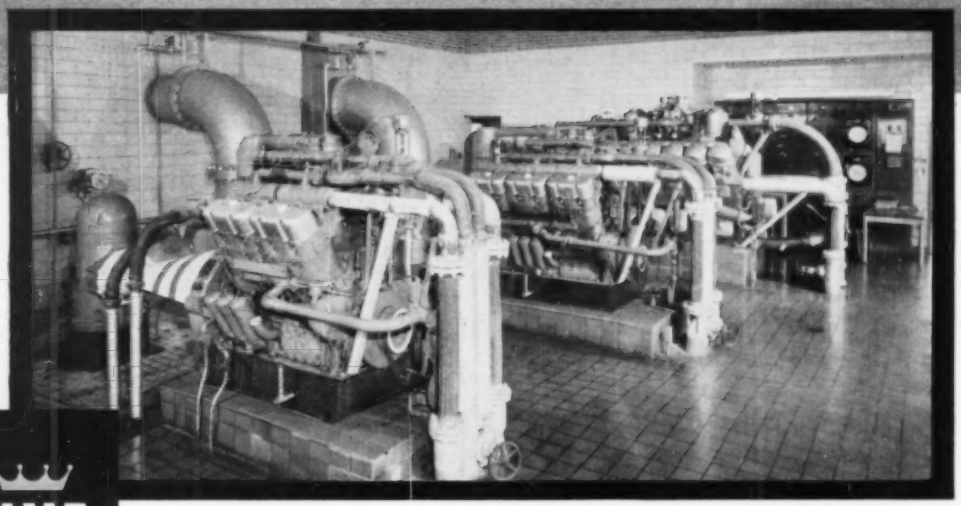
Either Merchen Volumetric can be converted to a gravimetric feeder by adding weighing components. An optional off-feed switch stops the feeder or actuates an alarm when feed falls below a selected rate.

For more information write Dept. M-54.00.

WALLACE & TIERNAN INC.
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

PUMPING 15 million gallons daily

City of JOLIET, ILL. Sewage Treatment Plant with its three ROILINE Engines



ROILINE ENGINES do it *with sewage gas fuel*

Pumping fifteen to twelve million gallons! Joliet's city sewage treatment plant does it—every day.

The Worthington sewage pumps are driven through Amarillo right angle gears by ROILINE Engines *using sewage gas for fuel.*

ROILINE Model L-3000 runs *continuously,* 107 hp at 545 rpm, capacity 10,400 gpm; 12-cyl., 6¾-in. bore x 7-in. stroke, 3006 cu. in. displ.

ROILINE Model H-2000 as an *auxiliary,* 75 hp at 637 rpm, capacity 7,300 gpm; 8-cyl., 6¾-in. bore x 7-in. stroke, 2004 cu. in. displ.

ROILINE Model L-3460 as a *standby,* 151 hp at 530 rpm, capacity 15,300 gpm; 12-cyl., 7¼-in. bore x 7-in. stroke, 3468 cu. in. displ.

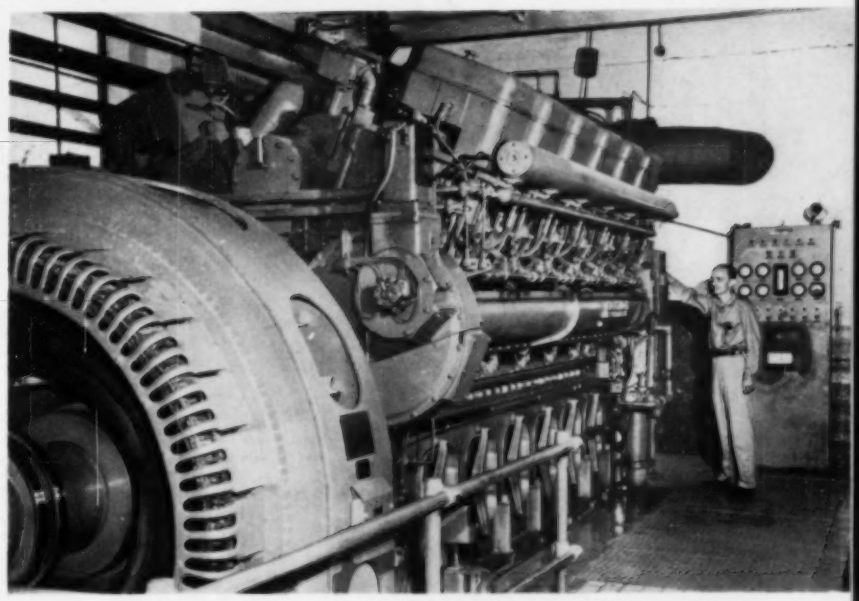
Send for literature • ***SEE YOUR ROILINE ENGINE DISTRIBUTOR*** 517

ARIZONA, Casa Grande, Engine Service Company, Inc.
ARKANSAS, Paragould, Wonder State Manufacturing Co.
CALIFORNIA, Long Beach and Bakersfield Engine & Equipment Company
COLORADO, Denver, Emrick & Hill Engine & Equipt. Co.
KANSAS, Garden City and Great Bend Carson Machine & Supply Co.
LOUISIANA, New Orleans and Shreveport Southern Engine & Pump Co.
MICHIGAN, Reed City, Hafer Engine Company
MINNESOTA, Minneapolis, Central Equipment Co.
MISSISSIPPI, Jackson, Southern Engine & Pump Co.
NEW JERSEY, Kenilworth, Callahan Equipment Co.
NEW YORK, Syracuse, Schenectady and Lisbon J. C. Georg Corporation
OHIO, Columbus, Cantwell Machinery Company
OKLAHOMA, Oklahoma City and Tulsa Carson Machine & Supply Co.
PENNSYLVANIA, Pittsburgh, P. C. McKenzie Company Bradford, R. R. Reck Company
TEXAS, Houston, Dallas, San Antonio, Kilgore, Corpus Christi, Beaumont Southern Engine & Pump Co.
Lubbock, Farmers Supply
Odessa, General Machine & Supply, Inc.
Wichita Falls, Nortex Engine & Equipment Co.
WYOMING, Casper, Emrick & Hill Engine & Equipt. Co.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS. / **New York • Tulsa • Huntington Park, Calif.**
Factories: Waukesha, Wisconsin and Clinton, Iowa

Power Installation Brings Savings

The new dual-fuel engine at the Bethany, Mo., municipal electric plant delivers over 14 kw-hrs of power per gallon; natural gas fuel will bring additional savings



Kenneth Danford, superintendent of utilities, stands at the controls of his new 2460-hp dual-fuel engine.

The new dual-fuel diesel recently installed in the Bethany, Mo., municipal power plant may have to wait a while before it can demonstrate its full economy potential when operating with natural-gas fuel. But while waiting the new engine is operating as an oil-burning diesel and establishing new standards of efficiency and economy. In the first nine months of service, it has produced better than 14 kilowatt-hours per gallon of fuel consumed although operating with a load that averaged just 60%.

Bethany is a town of some 3,000 inhabitants in a pleasant farming area in northwest Missouri. During the hot summer months the power demand is even greater than the winter peak, due principally to air conditioning and refrigeration. The 1959 summer peak load was 1,700 kw, up some 8% from the previous year. Nearly all the electric load is for residential and retail store service, though there is some grain processing and cheese manufacture.

The municipal power plant at Bethany has a long record of successful operation through two early steam plants to today's low-cost diesel operation.

At present, the plant has four diesel engine-generator units, a 600-hp unit installed in 1929, a 1,000-hp unit installed in 1946 and a 1,600-hp unit installed in 1948, and the new unit.

The latest addition, the Nordberg Supairthermal Duafuel engine, is a 12-cylinder, 4-cycle V-type, Model FSG-1312-HSC. This engine provides 2,460 hp, 1,750 kw at 450 rpm at an altitude of 915 feet. Though designed for dual-fuel operation it is currently operated on diesel fuel only. Installed in November 1958, it replaced an old, low-horsepower engine and was installed on the same foundation that held the older engine with only minor foundation changes.

Operating Procedure

Normal operating procedure is to buy off-peak power during the 11 p.m.-to-6 a.m. period with all the diesels off the line. The diesels generate all of the power required to meet the load during the main portion of the day.

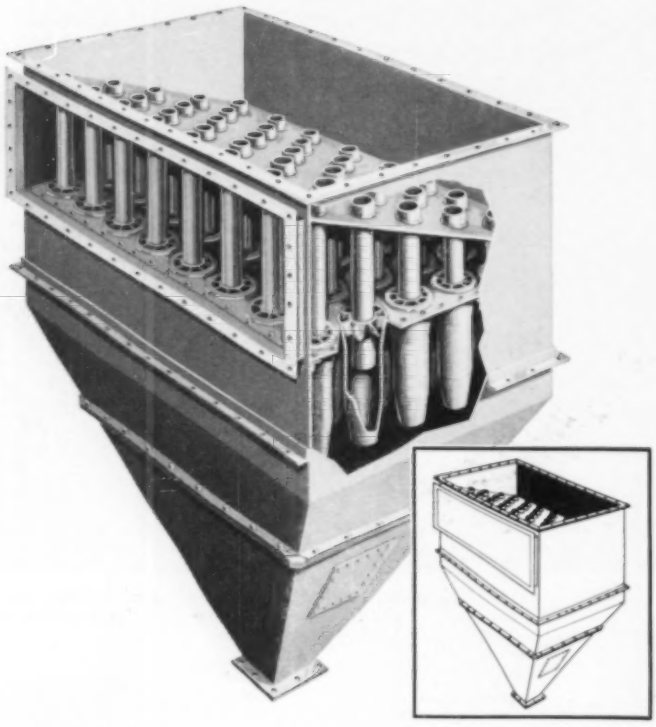
The new unit was installed to maintain the plant's ability to carry peak summer loads. Nevertheless, it was clear that the three older engines needed help. Anticipating the advent of natural gas, city officials and engineers wanted an engine that could utilize this economy fuel and carry a major share of plant production. The new Nordberg certainly met these specifications and is providing an interim dividend of efficiency as an oil-burning engine.

When the new engine went into service it took over as base-load producer. In the first nine months of operation, the engine was on the line for a total of 2,650 hours and generated 2,856,000 kw-hr while consuming 202,920 gallons of fuel. This represents an average of 14.06 kw-hr per gallon of fuel. In the ten months preceding installation of the new unit, the plant average was 12.39 kw-hr per gallon. In its nine months of service, the new engine produced 65% of total plant output and managed to raise the plant average to 13.55 kw-hr per gallon of fuel. Largest production for a month came in July 1959, when the big diesel delivered 515,000 kw-hr, 92% of plant output.

The efficiency of the new engine translates easily into fuel economy. In the nine months, fuel cost for the big unit was 6.04 mills per kw-hr compared to the plant's previous average of 6.86 mills. With the Nordberg in service, plant average was down to 6.27 mills which meant a direct saving of more than $2,500. This was achieved at a relatively poor load factor so that savings should increase as the load on the new engine increases. Furthermore,

(Continued on page 186)

New Ideas On Dust And Fume Control



New Products:

John Wood Improved Cyclone Collector

New collector tube and inlet vane designs in the John Wood Cyclone Collector result in sharply increased operating efficiency. These improvements enable the John Wood engineered equipment to provide the uniform gas flow to each cyclone and to assure the high centrifugal force necessary to remove even the smallest particle sizes.

All steel construction and 9" diameter cast tubes and vanes mean high resistance to high temperatures and severe abrasion. A full range of special casting materials meets even the most severe requirements. John Wood Cyclone Collectors are compactly designed and simple to install. Several duct connections and a wide variety of tube arrangements are available to handle gas volumes up to several hundred thousand CFM.

New Engineering: The complete line of John Wood equipment also includes Flooded-Bed Scrubbers, Venturi Scrubbers, Involute Cyclones, Fabric Filters and combination units. Extensive John Wood laboratories are available for advanced research on your air pollution problems.

New Service: John Wood Air Pollution Control is fully programmed from analysis of existing conditions to equipment installation. Frequently economies result that make the installation self-liquidating through lower maintenance and replacement costs.

Write for engineering assistance or specific product information. An air pollution preliminary analysis kit is available without obligation.

AIR POLLUTION CONTROL DIVISION
JOHN WOOD COMPANY
12 NICOLET AVENUE FLORHAM PARK, N. J. TUcker 7-3200

(Continued from page 185)

this is just an interim gain while the plant waits for the advent of natural gas with its greater economy.

When the new Duafuel engine converts to natural gas as a base fuel, a small amount of pilot fuel oil will be needed to trigger combustion. Either fuel may be used separately or in any combination desired. Conversion will require only a connection to the natural gas service main.

At present special fuel oil is delivered to the plant direct from Standard Oil's Sugar Creek Refinery in Kansas City at a current cost of 8.5 cents per gallon. The plant has a 15,000-gallon storage capacity. Oil is metered and strained as it is pumped to the 600-gallon day tanks. These tanks are electrically heated when necessary to raise the fuel temperature to 80°F. The oil is further purified with a micronic fuel-oil filter before being injected into the engine cylinders.

One labor-saving device welcomed by the engine operators is the electric barring motor geared to the flywheel of the new engine. This is particularly useful during periods of engine inspection and adjustment. The plant crew does all of its own maintenance work including checking all the injector nozzles.

A 300,000-gallon-per-day municipal water supply and treatment plant adjoins to the diesel power plant. The same operator is responsible for the operation of both water and power services so dependable trouble-free engine operation is mandatory.

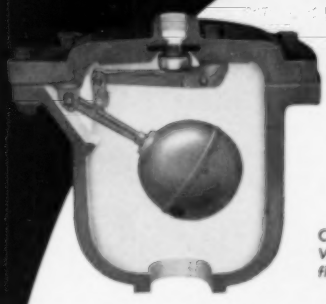
Kenneth Danford, Superintendent of Utilities, describes his new 2460 hp, V-12 Nordberg diesel engine as "compact, efficient, and dependable." The efficiency and economy of the engine have now become a matter of record. ◄◄

Golf Courses

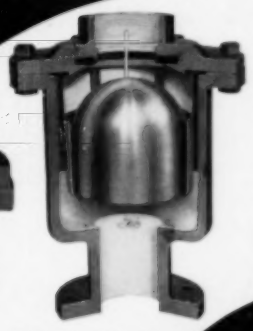
A golf course will cost probably $10,000 per hole, according to golf course architect Robert Trent Jones. The most desirable length of course, he feels, is between 6,900 and 7,000 yards. It should occupy a minimum area of 150 acres.

A par-3 course will require at least 30 acres, and better, should have between 50 and 60 to permit at least one par-4 hole. A driving range should occupy 14 acres and be at least 275 yards long.

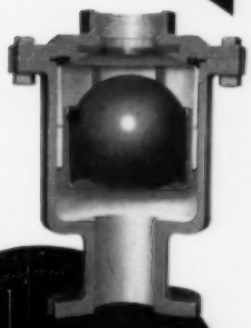
Mr. Jones' recommendations appear in a current publication of the Urban Land Institute, 1200 18th St., N. W., Washington 6, D. C. ◄◄



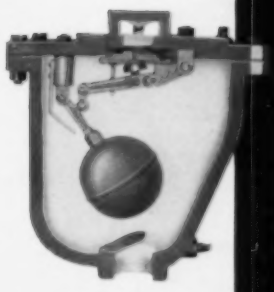
Crispin Pressure Air Valve.



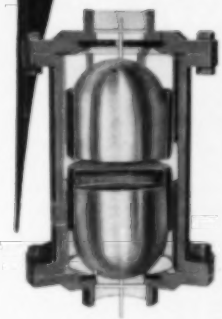
Crispin Air & Vacuum Valve with metal float.



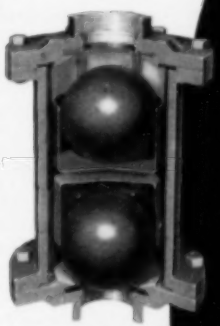
Crispin Air & Vacuum Valve with rubber float.



Crispin Universal Air Valve.



Crispin Negative Pressure Air Valve with metal floats.



Crispin Negative Pressure Air Valve with rubber floats.

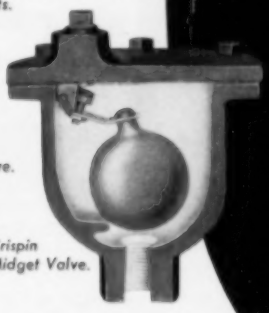
the *Golden Anniversary* line

Crispin AUTOMATIC *Air Control* VALVES

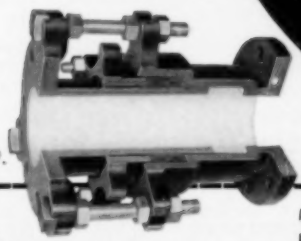
- **Simplified construction**
- **Easy accessibility**
- **Maximum durability**
- **Minimum maintenance**
- **Efficient operation**

Crispin Air Valves safely control air in lines handling liquids to maintain efficient operation—eliminate costly failures. That's why, for more than fifty years, water works engineers have made Crispin Air Valves first choice for dependability!

Crispin Sewer Valve.



Crispin Midget Valve.



Crispin Slip Joint.

Mail coupon for your free copy of this 28-page Crispin Air Valve Catalog.

• AIR CONTROL VALVES • FOR OVER 50 YEARS

multiplex
MANUFACTURING COMPANY
BERWICK, PENNSYLVANIA

MULTIPLEX MANUFACTURING COMPANY
DEPT. E, BERWICK, PENNSYLVANIA

Name _____

Company _____

Address _____

City _____ State _____

Title _____

©1961 VOLKSWAGEN OF AMERICA, INC.

Our dealers have had parts for our '62 model for years.

Yes. Our '62.

Next year's Volkswagen.

Doesn't it stand to reason?

We make only the one basic truck. We've been perfecting it for the past 12 years. Part by part.

Today practically every part is improved. Yet most fit any year VW you have.

The number of parts we take from Volkswagen production as spares would seem excessive to some manufacturers.

But VW service is as much a part of the idea as the VW price or the VW gas consumption.

Our dealers carry spares they almost never get calls for. Axles. Wheels. Even dip sticks. As a rule, this makes VW repairs much faster than other makes.

(Other dealers simply can't afford the spares for every year and model that a VW dealer carries for just one truck.)

This has become very important to people with '51 and '52 VWs. They can still get a rear quarter panel, a gas pump or a cylinder head in no time.

We're still making them for those years.

(And those years look like our '62, too.)

Limited-Purpose Annexation

. . . gives Denison, Texas, the advantage of control over suburban outskirts without the costly disadvantage of full city service

By **HAROLD D. LYNCH**
Administrative Assistant

Last July the city council of Denison did some pioneering in the Texas local-government field by adopting a "limited-purpose annexation ordinance." This brings additional area surrounding the regular corporate limits under city control for the purposes of planning, zoning, and sanitation and health protection. It enables the city to protect existing land uses in the outlying areas as well as to prepare for its future growth and development. Denison was the first city in Texas to adopt such an ordinance and to date only one other city has followed her lead.

Texas city attorneys are arguing the legality of this measure and are split almost evenly on it. But we feel that the Denison charter provision is based on well-established zoning powers and also on the provisions of the Texas state statutes governing home-rule cities.

Precedent

Some states, by statute, grant to their cities planning and/or zoning powers beyond the corporate limits and thereby alleviate the need for this type of an ordinance. To date, the courts have not tested these extraterritorial exercises of authority. Therefore the attorneys cannot definitely ascertain their legality.

Municipalities earned the right to zone in 1926 when the U. S. Supreme Court gave a favorable opinion in the case of the Village of Euclid et al. v. Ambler Realty Company.[1] In 1922, the Village of Euclid, Ohio, passed a zoning ordinance with a map similar to those used today. The Ambler Realty Company in this case attacked the principle of zoning as being unconstitutional, depriving a citizen of liberty and property without due process of law. On appeal, the Supreme Court upheld zoning as being part of the police power to protect the public health, safety, morals, or general welfare.

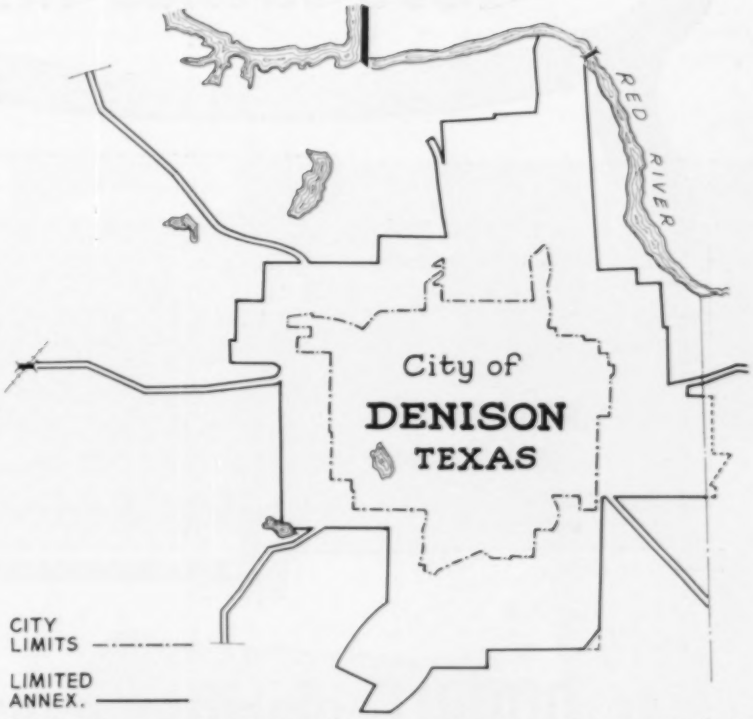
The authority to extend this jurisdiction beyond the normal corporate limits must now be examined. The annexation powers granted to local governments naturally vary from state to state. Texas statutes grant cities liberal annexation powers and thus we feel that we are on solid ground with our limited-purpose annexation ordinance. A home-rule city may annex adjacent territory according to the rules provided for in its Charter.[2]

Ordinances annexing adjacent territory by home-rule cities are also declared valid under Texas state law.[3] Article 974A grants cities authority over subdivisions within five miles of their corporate limits and this is extra-territorial jurisdiction similar to limited-purpose annexation.

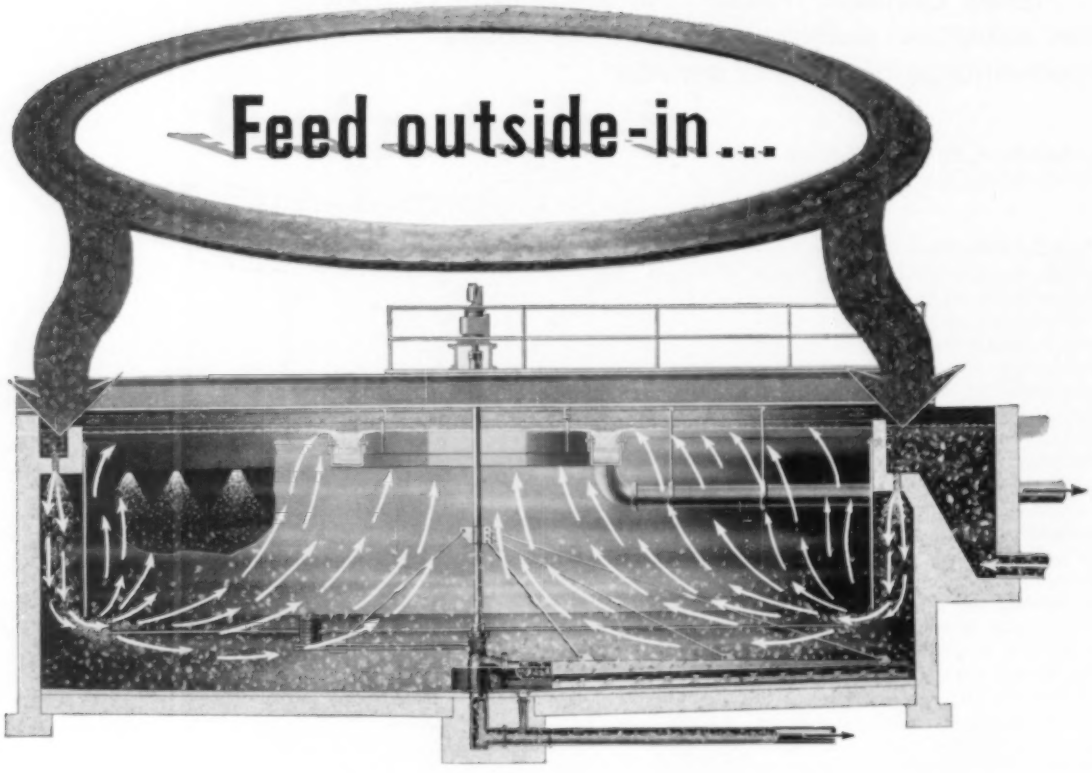
Denison is a home-rule city under the Texas constitution and laws. In 1956, the people elected a Charter Commission which rewrote the city charter, based on the council-manager form of government. The people then adopted this new charter that same year in a special election by a 2½:1 majority. At this time, Denison was beginning a period of growth after approximately 35 years of comparative stability. Anticipating the continued growth, the Charter Commission provided Section 8 of the new charter that permits limited-purpose annexation of areas within five miles of the corporate limits to protect these areas into which the city would eventually expand.

During the next 3½ years, the city government did not use the power granted, but nevertheless, did not forget it. The emphasis during this period was to annex fully at a rate

(Continued on page 191)



The limited-purpose boundaries, shown here, extend from the corporate limits for varying distances depending on present land uses and predicted development; there are also 1,000-foot strips along each of the major highways beyond the normal limited-purpose area, which have been annexed for planning, zoning, health and sanitation purposes.



to DOUBLE clarifier capacity

That's the capacity-adding difference between the exclusive Rex Rim-Flo Clarifier and conventional circular center-feed tanks. In Rim-Flo, the flow is introduced into a feed channel around the enitre periphery of the tank. The feed channel is hydraulically sized to provide uniform velocity of flow and to prevent depositing of solids in the channel bottom. The flow is then uniformly introduced into the tank through properly sized and spaced orifices in the channel bottom...each orifice taking its proper share of the total flow.

The influent entering the tank is distributed evenly between the outer tank wall and the baffle skirt. This area serves to reduce the effect of discharge through the ports so that the flow approaching the tank bottom is well diffused and at lowest possible velocity.

Because of this thorough diffusion and low velocity, harmful eddy currents and short-circuiting are practically eliminated. The flow moves gently throughout the entire tank cross section utilizing virtually the entire tank volume. Flow is directed upward to the center of a central effluent trough.

This proven principle will handle at least double the flow of a conventional tank...provide maximum efficiency. Why not get all the facts today. Write CHAIN Belt Company, 4648 W. Greenfield Ave., Milwaukee 1, Wis.

REX®

CHAIN BELT COMPANY

(Continued from page 189)

sufficient to cover the growing population. The cities of Denison and Sherman, only eight miles apart, constantly negotiated matters affecting the future growth of both communities. Protection of the land between the two cities was of prime concern and limited purpose annexation seemed the answer.

Operation

Once the city had completed its program of annexing, the primary consideration became one of protecting the areas where the next decade of growth would take place. After reaching an agreement on a mutual boundary with the city of Sherman, Denison then annexed, under limited-purpose terms, an area of 20 square miles, or slightly more than double the area within the corporate limits.

As previously stated, the ordinance stipulated that the newly annexed area would become part of the city for planning, zoning, and health and sanitation only. Developments in this area must comply with the city's subdivision regulations, building codes, health and sanitation rules, etc. In other words, for specified purposes, the limited-purpose area is part of the city.

No Power to Tax

The charter provision and the ordinance both stipulate that the city shall have no power to levy and tax for municipal purposes, on either the property or the inhabitants of this territory. Conversely, the city cannot spend funds in this area except for the purposes for which it was annexed. The inhabitants of this area may vote in council and charter elections but may not vote in bond elections.

Under the ordinance, all of the limited-purpose area became a residential zone pending the Zoning Commission's recommendations for a zoning ordinance. The matter was immediately referred to the Zoning Commission together with a map of present land uses in the area. Public hearings were held and the opinions of the inhabitants of these areas were noted. The Zoning Commission members next toured the entire area in order to base their recommendations on first-hand knowledge. Considering public opinion, existing land uses, anticipated development, and sound zoning principles, the Zoning Commission recommended an appropriate zoning ordinance to the Council. Following a public hearing, the City Council formally zoned the limited-purpose areas by an amendment to the city's zoning ordinance. Non-conforming uses and agricultural land uses will be corrected in this area in the same manner as they are within the corporate city limits.

After Denison passed its ordinance, Sherman called an election to obtain public approval of a similar charter amendment allowing limited-purpose annexation. Sherman has since passed an ordinance annexing the territory up to Denison's expanded boundaries. Both towns hope for and anticipate growth and industrial development in this area. They are now planning for this growth by protecting sites which industry and residential developers will one day be interested in acquiring. This aim is being accomplished without incurring the disadvantages of full annexation. It also avoids the high costs of providing regular city services to underdeveloped areas. The two cities also feel that they are showing a desire to grow and that this will encourage development.

To date, the results of limited-purpose annexation have been grati-

(Continued on page 193)

Go Hydraulic

SEAL-PRESS

has the 'seal of approval'

HYDRAULIC OPERATION • 85,000 LBS. PRESSURE • ONLY SEAL-PRESS OFFERS • 12 MO. WARRANTY •

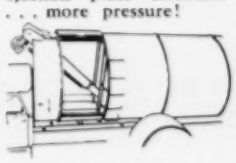
SEAL-PRESS, INC.

Rt. 10, Box 208, San Antonio, Texas

Write for brochure – full specifications.

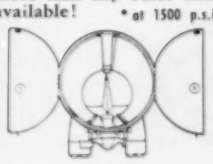
1 HYDRAULIC OPERATION

Since 1954 SEAL-PRESS refuse units have been the choice of cities throughout the U. S. and abroad. Now . . . for '61 . . . new *hydraulic* double acting cylinder drives packer and ejection plate smoother . . . more pressure!



2 85,000 LBS. PRESSURE*

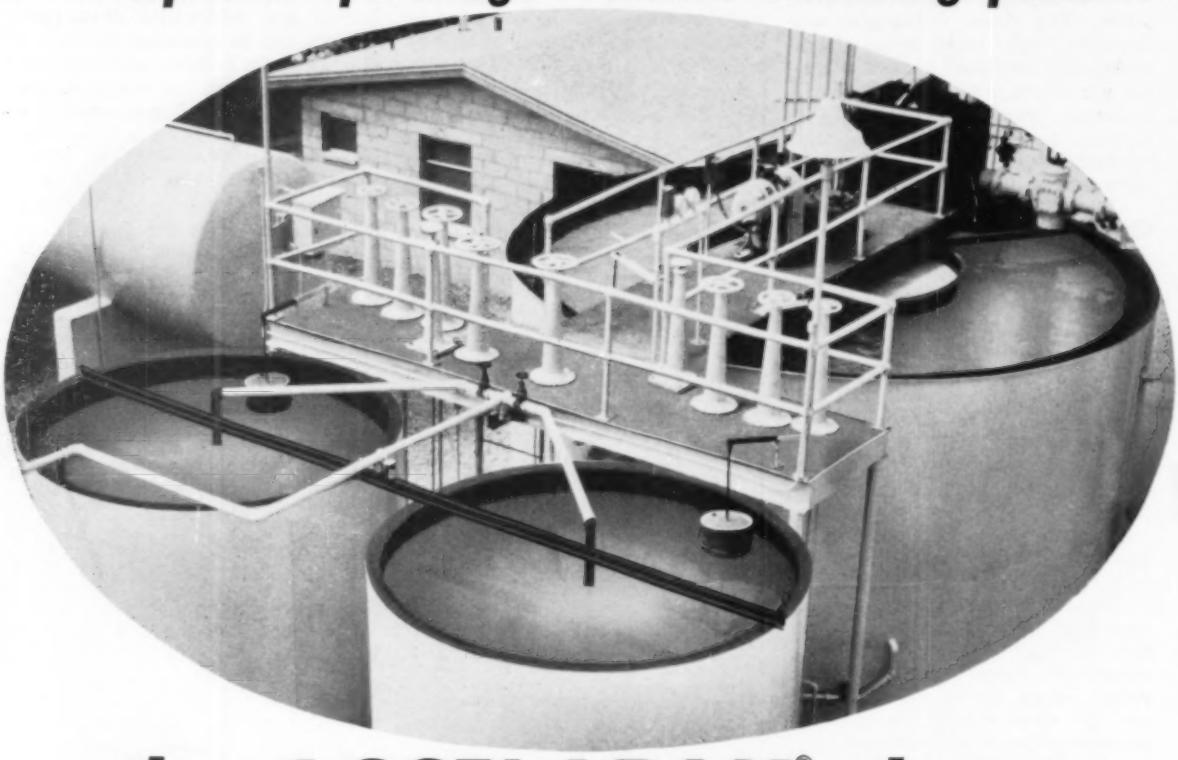
Here's the power . . . the performance, the packing pressure and rugged construction needed in a profitable operation for one truck or a fleet. 85,000 lbs. of pressure — more than any other unit available! * at 1500 p.s.i.



3 12 MONTHS WARRANTY

SEAL-PRESS, first in many design features, is now first again to offer a full year warranty. International reputation of SEAL-PRESS is backed up by this signed 12 months warranty.

A complete "package" water treating plant...



–the ACCELAPAK® plant

for small communities, subdivisions, motels, resorts, industries, etc.

COMPLETE—from inlet to outlet—nothing else required.

ADAPTABLE—for clarification, softening, iron or color removal, and sterilization. Pressure or gravity filters, as required.

STANDARDIZED—designed in all sizes with standardized dimensions in capacities from 15 to 350 gpm.

SIMPLE—working parts, easily accessible for minimum required attention. Simple erection and operating instructions.

DEPENDABLE—treatment results are easily obtained; uniformly and dependably maintained.

ECONOMICAL—costs of plants are low due to quantity purchasing and production; installation space is small; maximum utilization of treating chemicals is assured.

SEE YOUR CONSULTING ENGINEER if you are planning *any* installation. His services are essential for the design of the plant and selection of equipment that will best meet your requirements.

Write today for full details on the "ACCELAPAK" plant in Bulletin 1870-A or request Bulletin 80 showing our complete line of water and waste treating equipment.

INFILCO

516

INFILCO Inc.
General Offices, Tucson, Arizona
Field offices throughout the United States and other countries.

GENERAL AMERICAN

Subsidiary of General American Transportation Corporation

(Continued from page 193)

fying both to Denison and to Sherman. Denison has protected a potentially valuable residence area. Sherman has preserved a major industrial site.

It is too early yet to determine the ultimate destiny of limited-purpose annexation. We do feel that it is an important breakthrough in the solution of growth problems. It also seems comparatively void of any great disadvantages. The one great advantage is this: if and when our anticipated growth occurs, we believe that the cities of Denison and Sherman will be ready to meet it with their problems kept to a minimum. ◄◄

---

[1] 272 U. S. 365; 47 S.Ct.R. 114; 71 L. ed. 303.

[2] Vernon's Civil Statutes of the State of Texas, Vol 2A, Article 175.

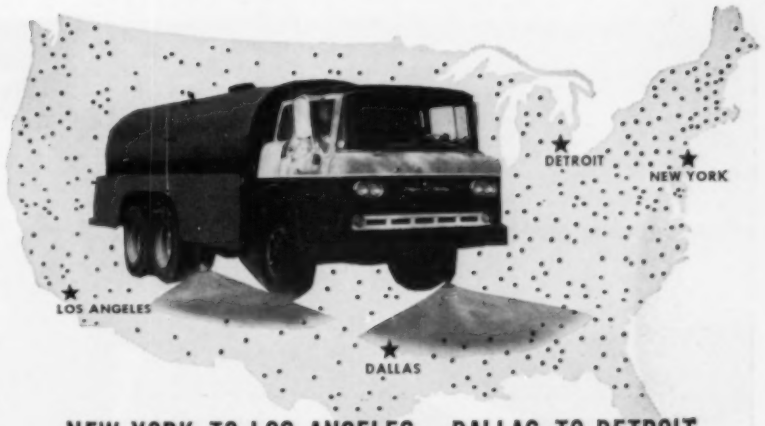
[3] Ibid, Articles 1174B and 1174C.

Travelers Research Center to Study Urban Problems

A new, non-profit research center in Hartford, Conn., has been established to serve both business and government agencies through applied research in the environmental sciences. It is known as the Travelers Research Center, Inc., and is located at 650 Main Street. Its president, Dr. Robert M. White, has announced that the center will develop its research program around the fields of meteorology, oceanography, geology and hydrology, including the application of environmental sciences to urban and regional planning problems, such as water-resource development and air-pollution abatement.

The history of the new corporation began in 1955 when the Travelers Insurance Companies established its own weather-forecasting center. The work of the center grew to include research in meteorology and related sciences and soon expanded beyond its application to a single company or even one industry. This led to the incorporation of an independent non-profit organization under the laws of the State of Connecticut on November 28, 1960.

The present staff, assembled from many sections of the United States and Canada, constitutes a team of 13 men with doctorates, 16 with master's degrees, and 12 with bachelor's degrees in science or engineering. About 30 sub-professional members make up the remainder of the present organization. ◄◄



NEW YORK TO LOS ANGELES—DALLAS TO DETROIT
Cities Small and Large Use **ROSCO FLUSHERS**

CLEAN STREETS THOROUGHLY—EFFICIENTLY, ECONOMICALLY

Rosco flushers are designed for the utmost in efficiency. A modern, high compression, short-stroke power plant furnishes high pressure water streams to flush any paved surface really clean. Heavier gauge steel tank for longer life . . . mounted integrally to the frame. High quality and ease of service make Rosco flushers the choice of modern maintenance departments in cities all over the U.S. Remember . . .

Rosco engineered to out-work your toughest jobs

Rosco MINNEAPOLIS
ROSCO MANUFACTURING CO.
3118 Snelling Avenue • Minneapolis 6, Minnesota

Before you buy any storage tank...

take a look at

No matter what your storage problem, a prestressed concrete tank offers many immediate and long term advantages. Minimum maintenance, longest service life, lowest overall cost, 75% of construction cost is spent locally. Modern in engineering and design, proven in service, lowest in cost...prestressed concrete should be considered in any tank planning.

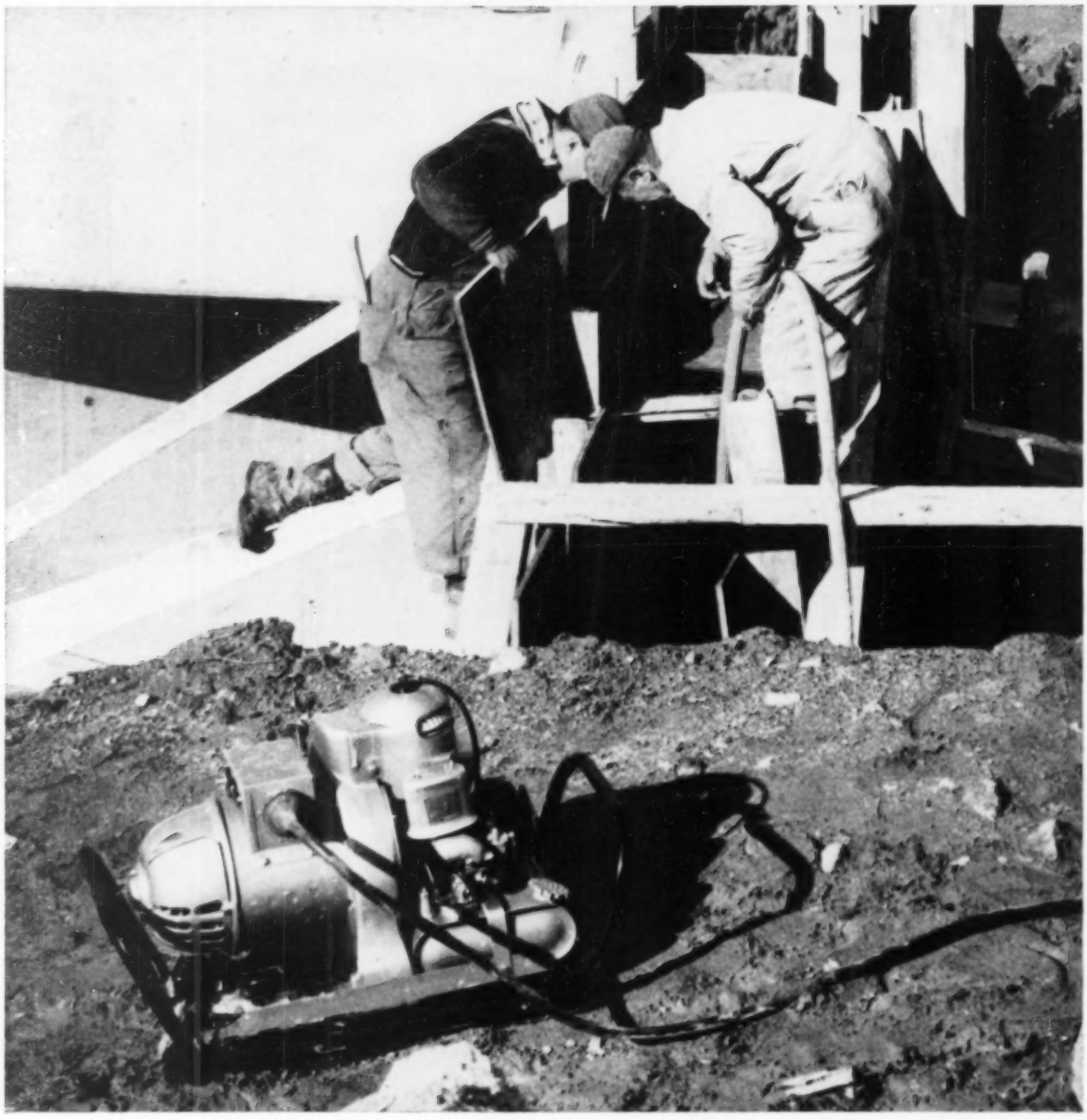
Send for your copy of our new brochure "Prestressed Concrete Tanks."

PRELOAD

THE PRELOAD COMPANY, INC.
355 Lexington Ave., New York 17, N. Y. • Tel.: MUrray Hill 7-0488
1216 Hartford Bldg., Dallas 1, Texas • Tel.: Riverside 8-4047

PRELOAD CONCRETE STRUCTURES INC. 837 Old Country Rd. Westbury, L. I., New York
THE CANADA GUNITE COMPANY, LTD. 125 Hymus Blvd. Pointe Claire, P.Q., Canada
HERRICK IRON WORKS 28400 Clawiter Rd. Hayward, Calif.

PRESTRESSED CONCRETE



Cuts vibrating costs in half

That's right — you can cut vibrating costs in half with Homelite High-Cycle Concrete Vibrators. You save labor costs because only one man is needed to handle a Homelite. You save extra expense of constructing special scaffolds and cradles because you can place the Homelite High-Cycle Generator in any convenient spot within 400′ of the vibrating operation. You save time (and money) because one powerful Homelite will place 30 to 40 cubic yards of 2" slump concrete per hour.

You save again on maintenance because the efficient, high-cycle motor in the vibrator barrel is the most trouble-free electric motor made. And, because the Homelite High-Cycle Generator delivers up to 2500 watts of 110 volt D.C. current as well as up to 3000 watts of high-cycle power simultaneously, you save the added expense of an extra generator for operating Universal power tools and lights.

We'll gladly prove these savings on your job. Ask for a demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE

CARRYABLE
CONCRETE **VIBRATORS**
PUMPS • GENERATORS • BLOWERS

HOMELITE • A DIVISION OF TEXTRON INC. • 106 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA — TERRY MACHINERY CO., LTD.

Meet Centralized Municipal Purchasing

By OTTO R. WINTER
Purchasing Agent
New Britain, Conn.

Centralization of purchasing processes carries with it many advantages to a tax-supported body. In a small town using the selectman form of government, buying is usually done by using departments with one of the selectmen acting the role of supervisor of purchasing. Essentially these units have a centralized purchasing authority in the selectman.

When this town becomes a city its volume of purchases soon grows beyond the physical ability of the selectman who is usually a part-time government worker. Then each department becomes its own buying agency and buys each item as it is needed. There are, of course, many items which all departments use but in this type of "pickup" buying the city finds itself paying a high price for these commodities since only small quantities of each are bought at one time. The vendors are also for the most part local retailers who must make a fair profit on all of their merchandise whether sold to an individual or to a city government.

There have also been occasions in this type of a buying arrangement

Otto R. Winter

when certain vendors are chosen for their willingness to contribute to the "proper" political party. This can cost the city money since this vendor must somehow get his money back plus his usual profit. It is very difficult for a vendor to sell a city with this type of an arrangement unless he "knows" somebody. This also is expensive to the taxpayer since it does not promote competition and offers no incentive to a vendor to lower his prices.

Centralized purchasing is designed to correct these evils and to realize more "value for the tax dollar." The idea of centralization in purchasing is not new. Industry has practiced it for years and what is effective in industry where purchasing is done for profit is also good for government agencies. This is a self-evident fact.

An effective centralized purchasing agency must have

authority
proper personnel
central stockroom
system
professional organization

In establishing centralized purchasing a small city must be sure that first of all it adopts a law which gives its purchasing agent sufficient powers to carry out his program. This law should make it difficult for a changing governing body to alter it. For example, it is better to have the law, including rules and regulations governing purchasing, adopted by the state legislature than to have an ordinance passed by the local council or board of selectmen. The latter method makes it a simple matter for either of the above mentioned bodies which might disagree with the purchasing agent to change the ordinance. It is essential in the writer's opinion that the law include all rules and regulations and that it spell out the purchasing agent's authority to guide his decisions.

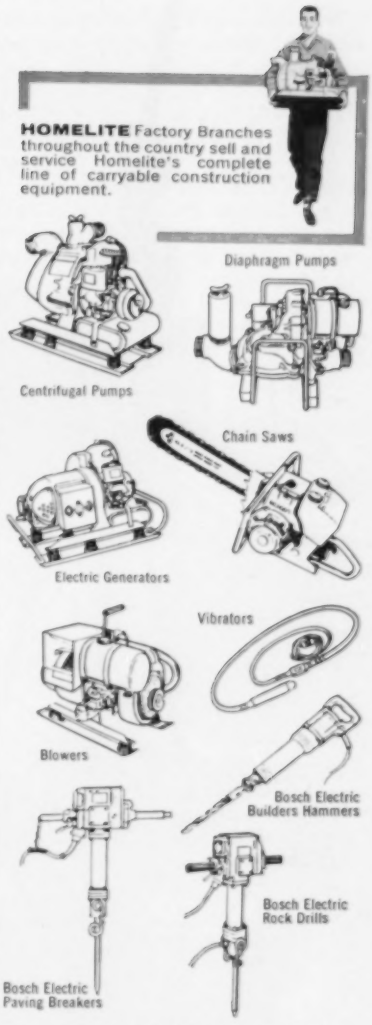
Sound Personnel

It is also important to employ the proper personnel. Of course, it is first of all necessary to hire a qualified purchasing agent. Then he should be given adequate quarters with enough help to execute his program.

Common-use items should be purchased in quantity and stored in a central stockroom, because this:

permits quantity purchases and controlled use.
permits standardization.

(Continued on page 197)



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE
A DIVISION OF TEXTRON INC.
106 Riverdale Ave., Port Chester, New York

In Canada:
TERRY MACHINERY CO. LTD.

WATCHING ROBERTS AT WORK

Sidewalk superintendents have all the fun! Everywhere a Roberts Filter plant goes up you'll find them supervising the construction . . . without any of the actual headaches.

But any experienced sidewalk superintendent can tell you that Roberts Filter—the actual on-the-job supervisor—possesses the know-how needed in the manufacture and installation of water purification equipment. For over 60 years Roberts Filter has devoted its energies to equipping and installing water processing plants for municipal and industrial use.

Roberts-engineered equipment spells dependability to every engineer and architect. Roberts supplies a full range of equipment for water filtration and softening plants of reinforced concrete, wood or steel type construction. Included in the Roberts line are vertical and horizontal pressure filters, Zeolite water softeners and swimming pool recirculation plants.

Solving municipal and industrial water purification problems is a Roberts specialty. Our extensive engineering organization has—through the years—cooperated successfully with engineers and architects in designing the water purification plant best suited to each individual need. We would be delighted to furnish details.

Visit the Roberts Filter Booth 102 at A.W.W.A. Convention, June 4-9.

ROBERTS FILTER MANUFACTURING COMPANY
601 COLUMBIA AVENUE, DARBY, PA.

the nameplate of dependability . . .

MECHANICAL EQUIPMENT
BY
ROBERTS FILTER MFG. CO.
DARBY, PENNA.

(Continued from page 195)

offers a central receiving point which enables purchasing to check receiving reports. The city can readily determine that it is paying for no more than it is using.

While we're discussing a stockroom it seems to me to be imperative that the school department be included in this plan. Their volume of use serves to bring prices down. Industry does not divide its purchasing function; government should purchase for the maximum use of the tax dollar.

To get maximum value the purchasing agent must keep up with the latest developments in his field. This practically requires membership in the National Institute of Governmental Purchasing, Inc.

This article is intended to guide small communities at a stage requiring reorganization of government function. In this era of greatly increased population figures many small towns are becoming cities with increased tax burdens and larger budgets. These communities are going to need a strong central purchasing system. ◄◄

New York City Studies A Snow-Melting Truck

A mobile snow melter, designed to convert 60 tons of the white stuff to water every hour, will soon be under close and analytical scrutiny by Sanitation Department officials in New York City. The experimental truck-mounted unit is a product of Peabody Engineering and costs approximately $50,000.

The new machine proposes to dispose of the snow by mixing it with hot water. Most previous machines relied on the application of hot gasses. The manufacturer claims that the new principle will produce efficiencies on the order of 95 to 98%.

The unit is expected to burn almost three gallons of kerosene per minute while performing at its rated capacity. The burner will heat water to 160°F. A 435-gpm Allis-Chalmers pump will then spray this water into a hopper which continually receives snow from a snow blower in the same manner that the blower deposits snow into a truck box for hauling. Future melters may integrate a blower on the front of the truck, resulting in a self-contained unit. The bottom of the hopper will contain four feet of hot water into which the snow will fall and melt. Part of the spray will impinge directly on the bottom portion of the snow in the hopper to speed the process. A second pump equipped with a strainer will recirculate part of the water and pump the balance to be reheated or disposed of. Thermostats will control the temperature of the recirculated and disposal water at a range of 10° to 20° above freezing. Where surface temperatures are favorable and inlets nearby, operators can discharge excess water in the gutters. Elsewhere they will use a hose to direct the discharge into a manhole.

Designers expect the new machine to melt in one hour a six-inch snowfall on a 30-foot roadway 1,000 feet long. These anticipated results assume a 13% water content which yields a unit weight of 220 pounds per cubic yard, typical of a winter storm.

Although the new mobile snow melter is the first of its type, similar stationary units are in place at parking lots and other locations including La Guardia Airport in New York City. Dozers push the snow into a ground-level pit which replaces the hopper. ◄◄

POWER TAMPERS, made by the Kelley Machine Div., Wiesner-Rapp Co., Buffalo, N. Y. provide one of the most grueling tests for the rugged dependability of Wisconsin Engines.
they're
WISCONSIN-POWERED

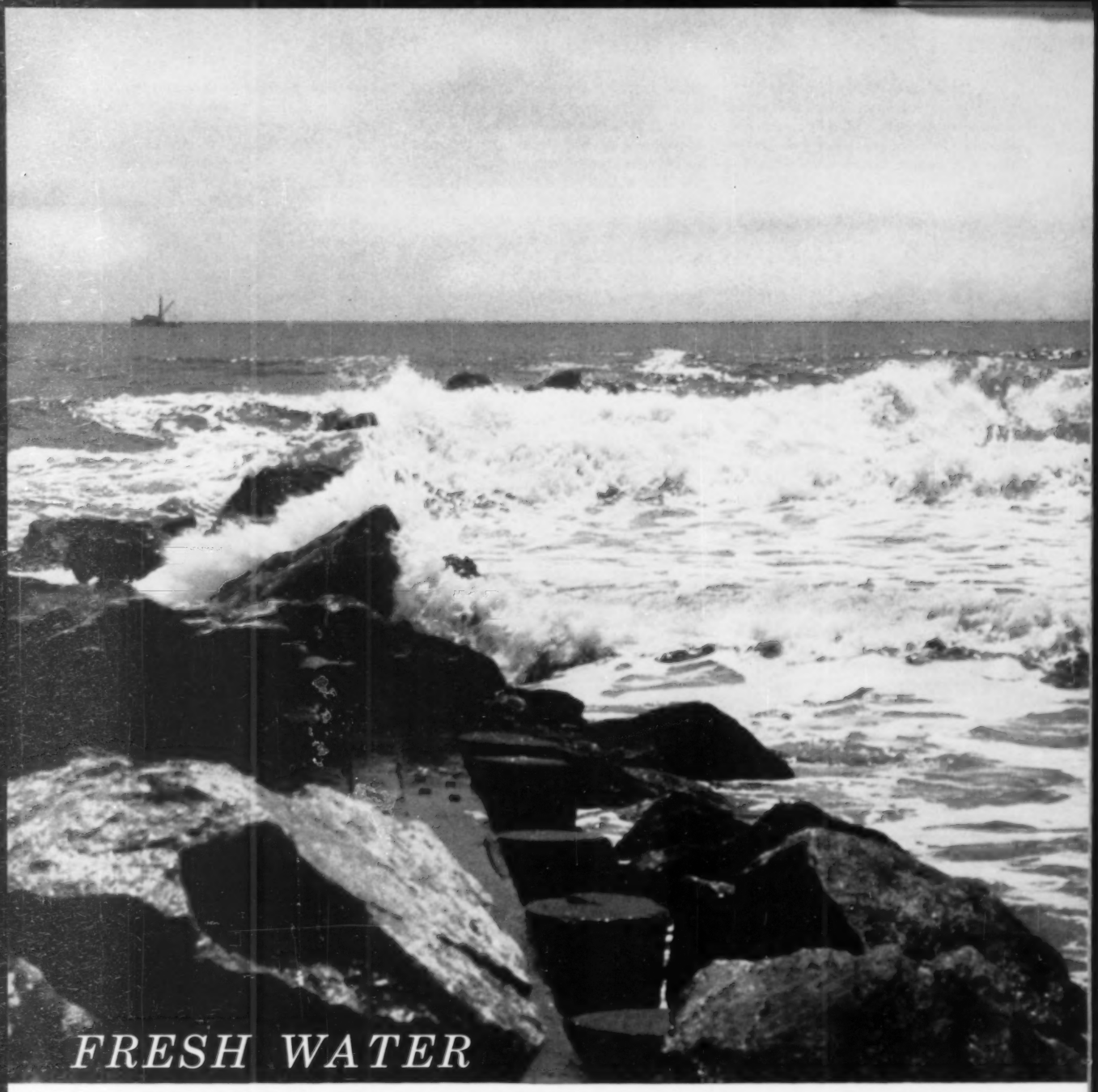
to keep surfacing costs well within your budget

You can meet the clamor for fast surfacing and lower costs with Wisconsin-powered tampers, like those shown. Here the rugged 6-hp ACN engines unleash 2700 two-ton impacts per minute. And the user reports: *"The Wisconsins take it and keep coming back for more"* — job after job!

The Wisconsins are precision-built to work better and to last longer on the toughest jobs. Tapered roller bearings on the forged-steel crankshaft absorb all thrusts. High torque prevents stalling at low speeds. The result: the most on-the-job power service, with the least care and lowest upkeep cost.

To lower costs, make sure that the power equipment you buy or rent is powered by heavy-duty Wisconsin Engines, 3 to 56 hp. Send for Engine Bulletin S-249. Write Dept. U-11.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines



...A NEW WAY

A new method of converting sea or brackish water—suitable for towns and cities all over America—is now under intensive development at General Electric. Called THIN-FILM distillation, this new G-E process has already achieved over-all heat transfer coefficients at least four times higher than those presently available with commercial equipment. This high heat transfer rate means lower energy costs, a significant factor in achieving economical operating costs.

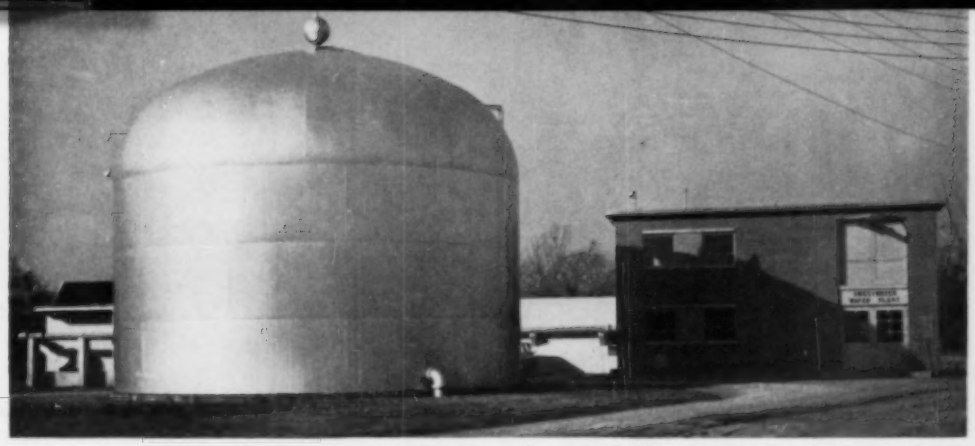
These conclusions were reached after more than 3000 hours of THIN-FILM tests conducted for the Department of Interior's Office of Saline Water. During these THIN-FILM tests, sea water was converted in seconds from 35,000 parts salt per million parts water to a purity of less than one part salt per million parts water.

General Electric is rapidly expanding its program on saline water conversion, including a THIN-FILM municipal pilot plant. You will be kept informed of our progress. 155-05

Progress Is Our Most Important Product

GENERAL ELECTRIC

BURLINGTON, VERMONT



Sweetwater's expandable water-treatment plant enhances the city's ability to attract new industry.

Our Future Was at Stake

Sweetwater, Tenn., offers its citizens ample water for the future and effective sewage treatment with one program

By **J. G. ENGLEMAN**
Recorder

An order to remove the "Public Water Approved" sign at our city limits by the State Public Health Department sparked our $750,000 water and sewerage improvement program. For years the City Board of Commissioners had given thought to the problem but for a community of 4,400 people to undertake such a sizeable program is not easy. We needed a jolt and public notification that citizens of Sweetwater were drinking impure water gave it to us.

Our consultants, Roberts and Company Associates, Architects and Engineers of Atlanta, Ga., estimated that a $625,000 bond issue plus a Federal grant of $150,000 would provide sufficient funds to construct a water-purification plant and a sewage-treatment plant of 1,000,000-gallons-per-day capacity each. The passing of a referendum by a 3-to-1 majority favoring the project demonstrated the effectiveness of that jolt on our people. It meant increasing our water rates and the levying of a sewer service-charge; but the future of Sweetwater was at stake and our citizens realized it.

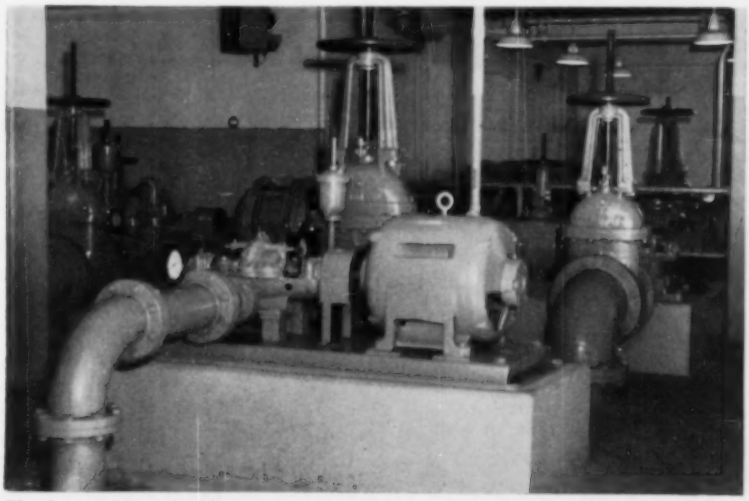
Our present water supply comes from Sweetwater Creek, which has a minimum flow on record of 3.5 mgd. Allowing 2.0 mgd for a local chenille plant and other downstream users, we still have 1.5 mgd for our own use. Cannon Spring, our old source, can provide another 0.5 mgd and, if more water is needed, we can turn to the Little Tennessee River.

The new water-purification plant has a capacity of 1.0 mgd but can be enlarged up to 16 mgd as demand increases. The intake at Sweetwater Creek contains a manually cleaned bar screen and two Layne & Bowler Pump Co. pumps with a capacity of 700 gpm each at 25-foot head.

Purification facilities at the treatment plant include:

- **A flash-mix flume with wood baffles.**
- **Three Omega Universal feeders, one for aluminum sulphate and two for lime and/or carbon.**
- **A mixing basin, 21 feet by 12 feet by 14¼ feet deep, with two American Well Works paddle mixers and wood baffles provided between the mixers.**
- **A 75-foot-by-25-foot-by-14¼-foot-deep settling basin that provides four hours detention at 1.0 mgd flow.**
- **Two filters, each 12 feet by 16**

(Continued on page 200)



The four existing high service pumps were moved from the old to the new plant to serve the new plant as they had the old.

This sewage-treatment plant assures the city that it no longer is polluting Sweetwater Creek, its primary source of water.

The plant, although small, does contain a well-equipped laboratory. Tests show that the plant is performing well.

(Continued from page 199)

feet by 19 feet deep, with Wheeler bottoms. Each unit has a rating of 0.5 mgd at 2.0 gpm per square foot of surface area. The Builders-Providence rate controllers are the direct-acting venturi type designed to discharge normally 0.5 mgd.

- **Two manually adjusted, solution-fed Wallace & Tiernan "V-notch" chlorinators.**

Filtered water first flows to a building clearwell 17½ feet by 25 feet by 5 feet deep. Two Layne & Bowler Pump Co. pumps at 700 gpm, 30 TDH capacity transfer water from the building clearwell to a 300,000 gallon, 42-foot diameter R. D. Cole steel-ground storage reservoir. The wash-water pump, an American Marsh unit of 4,000-gpm capacity at 30-foot head, takes suction from the steel reservoir as do the high-service units.

We utilize all our existing high-service pumps. These include:

- **One Ingersoll Rand rated at 550 gpm.**
- **Two Allis-Chalmers, one of 350-gpm capacity and one 550-gpm unit.**
- **A 440-gpm Peerless pump powered by a 64-hp Ford industrial engine.**

Besides the more than 300,000 gallons of storage capacity at the plant we also have a 75,000-gallon elevated tank built in 1908 when our original water system was installed and two standpipes, a 310,000-gallon tank built in 1921 and a 325,000-gallon tank erected in the year 1949.

Sweetwater Creek was not only our source of water; it also served as a receiving stream for the community's sewage. Seven sewers, 6 to 24 inches in diameter, discharged sewage to the creek. This condition was anything but good and once the governing body realized that the people favored construction of a sewage-treatment plant as well as a water-purification facility, they considered building the two facilities as a single project.

While the present capacity of the sewage-treatment plant is 1.0 mgd, it can readily be tripled in size. It

(Continued on page 203)

Monthly Charges

WATER

First 1,000 gallons	$ 1.50 (minimum)
Next 9,000 gallons	.50 per 1,000 gallons
Over 10,000 gallons	.17 per 1,000 gallons

SEWAGE
(Based on Water Use)

First 1,000 gallons	$ 1.25 (minimum)
Next 9,000 gallons	.35 per 1,000 gallons
Next 990,000 gallons	.12 per 1,000 gallons
Over 1,000,000 gallons	.07 per 1,000 gallons

WATER AND SEWER CONNECTIONS

½-inch water tap	$60
All other taps	Actual cost to city
All sewer taps	$50

Johns-Manville helps take the guesswork out of buying Plastic Pipe!

Now you can buy plastic pipe and be assured in advance that the product you're getting has been manufactured under rigid standards of quality control. You see, the J-M trademark, symbol of quality since 1858, stands behind each foot of Johns-Manville plastic pipe.

J-M ABS and polyethylene pipes are manufactured with only top-quality virgin resins. They have undergone extensive research and have been use-tested for many years. Thousands of hours of study, in all types of applicable service conditions, have resulted in pipes that are consistently uniform in quality. This means that you will be getting a superior product . . . one that will help reduce service failures and provide many years of dependable and economical service.

For details on NSF-approved Johns-Manville ABS and polyethylene plastic pipes, mail in this coupon today!

JOHNS-MANVILLE Box 14, AC-6, New York 16, N.Y.
In Canada: Port Credit, Ontario

Please send me, without obligation, free information on J-M plastic pipe for:

- ☐ Cold water supply lines
- ☐ Jet wells
- ☐ Sprinkler and lawn irrigation systems
- ☐ House-to-main service lines
- ☐ Process piping
- ☐ Natural gas lines
- ☐ Submersible pumps

NAME_____

ADDRESS_____

CITY_____ ZONE_____

COUNTY_____ STATE_____

JOHNS-MANVILLE
Pipe Division

JOHNS-MANVILLE JM PRODUCTS

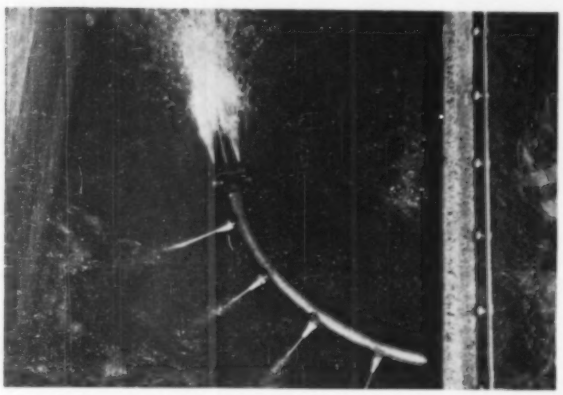
Here's Another Water Works First

THE NEW S-TYPE MODEL 58 PALMER FILTER BED AGITATING UNIT

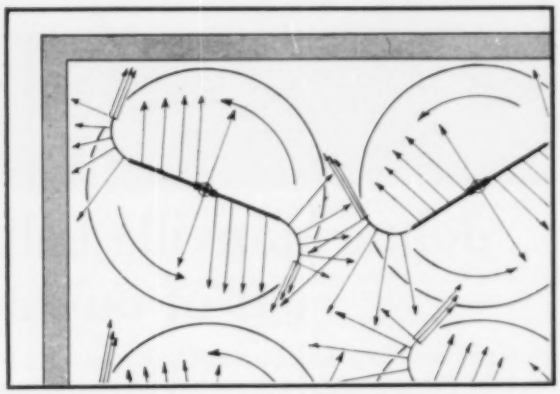
NOW you can have even INCREASED EFFICIENCY in filter bed washing from the original developer of the PALMER FILTER BED AGITATOR UNIT used in thousands of filter installations here and abroad.

Simplicity in design and operation plus lowest possible maintenance cost has always been our main keynote.

Now we can conservatively promise a 25-30% increase in filter cleaning efficiency with the same inherent features proven by 20 years of constant service. Operators said it couldn't be done but the diagram and picture below will show you it has been accomplished.



Portion of an S-Type Filter Arm in actual service.



New S-Type Filter Arms double the cleaning action.

The new S-TYPE Unit with Curved Ends and Advanced and Trailing Nozzles now produces 4 impulses per revolution to each CORNER and VOID area as compared to 2 for the old "Straight Arm" unit.

In addition the doubly angled nozzles on the straight pipe portion of the arm impart a thorough recirculating motion to the entire expanded bed to assure complete cleaning of all expanded filter media particles.

The old "Straight Arm" has increased filter efficiency for years but now you can have the advantages of the new T-TYPE for definitely better cleaning results.

Pat. Pending

Write Us for Information on the New S-TYPE and Adaptation of Your Old "Straight Arm" Type Units.

PALMER Filter Equipment Co.
822 East 8th Street, Erie, Pa. Ph. GL 4-3901

(Continued from page 200)

provides primary and secondary treatment, employing a trickling filter for the latter.

Basic treatment facilities include the following:

- **One 4 x 22½-foot grit chamber 14 feet deep containing a bar screen in the by-pass chamber, a 24-inch Chicago Pump Barminutor, and a Hapman grit collector conveyor.**
- **An 8 x 22½-foot wetwell, 20 feet 10 inches deep, from which the two American Well Works raw-sewage pumps take suction. Each of the pumps is rated at 870 gpm against 30-foot head.**
- **Two primary settling tanks each 56 x 14-feet with a 7-foot average water depth. They provide two hours detention time at design capacity with a settling rate of 650 gallons per square foot and an overflow rate of 8,000 gallons per day per foot of weir. Collecting equipment consists of two American Well Works rectangular sludge collectors.**
- **One 100-foot-inside-diameter trickling filter. Dosing rate is 3.75 mgd with 2.75 mgd recirculation equaling 15.25 mgd per acre.**
- **Two secondary settling basins, each 53 feet by 14 feet by 7-foot average water depth. These provide 1.5 hours detention and a 675-gallon-per-square-foot-per-day settling rate. Collectors are similar to those in the primary tanks.**

Sludge digestion takes place in a 40-foot-diameter digester heated with a 250,000-BTU-per-hour Pacific Flush Tank sludge heater. Two Wemco Torque-Flow solids pumps, with a capacity of 75 gpm at 28-foot head transfer sludge from the sludge sight-well to the digester while a 150-gpm, 25-foot-head American Well Works pump recirculates sludge through the heat exchanger. The digester capacity is based on population equivalent, with 4.0 cubic feet per capita.

Plant Effluent

All plant effluent passes through a Parshall flume with a rating curve of nine inches. A B-I-F Industries Chronoflo transmitter with an indicating, recording and totalizing receiver measures sewage passing through the plant.

A manually adjusted Wallace & Tiernan chlorinator which possesses a maximum capacity of 400 pounds per day provides for the chlorination of the effluent.

We received bids for the two plants and an interceptor sewer on

(Continued on page 205)

THE ORIGINAL AND WORLD LEADER IN INSECTICIDAL FOG GENERATORS

EXTRA VERSATILITY
EXTRA ECONOMY ON GASOLINE OR LIQUID PETROLEUM GAS

FOG OR MIST
DEADLIEST TO PESTS

True clean all-enveloping TIFA fog gets the kill wherever insects swarm. TIFA can also produce a useful fog mist or spray. Best by test for over 17 years, TIFA gives complete space control at lowest operating and maintenance cost in 7000 communities throughout the world. Peak performance with both new and older type insecticides . . . one-man operation. New Starter-Generator (optional) for immediate starts, easily attached to new and existing TIFA units. Listed by Underwriters' Laboratories, Chicago.

Write for illustrated folder and official comments.

TODD SHIPYARDS CORPORATION
PRODUCTS DIVISION
SALES AND SERVICE DEPARTMENTS:
Columbia and Halleck Streets, Brooklyn 31, N. Y.
PLANT, SALES AND SERVICE: Green's Bayou, Houston 15, Tex.

Sales and Service Agencies throughout the Western Hemisphere

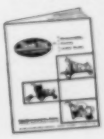
Mark-Rite Model 9000 LINEMASTER automotive type clutch and differential with chain drive deliver maximum power with no slippage and will climb grades up to 20%.

MODEL 9000
Self-propelled
Mark-Rite
LINE MARKER
Pays Its Own Way

Users of the Mark-Rite Model 9,000 one man operated Line Marker report that it lays 25% to 50% more line per day than other machines.

This machine was designed for use in cities, airports, counties and for other heavy duty uses. Precision built throughout. Stripes 1, 2 or 3 lines solid or skip simultaneously. One or two colors. Paint capacity 10 to 60 gals. Automotive precision steering and "Hairline" spray control issues clean straight or curved lines, in widths from 2" to 6". It can turn on a 6 foot radius. Accessories permit many other uses for this versatile machine, such as spray painting, insect and weed control spraying. Write today for literature or demonstration.

MODEL 301 MODEL 401 MODEL 8088 MODEL 80880 MODEL 9000



FOR COMPLETE SPECIFICATIONS WRITE FOR THIS 16-PAGE CATALOG TODAY . . . Tells how to select the proper Line Marker for your Job.

Unimasco, inc.
UNIVERSAL MANUFACTURING & SALES CO.
424 West Redondo Beach Blvd., Gardena, Calif.
FAculty 1-3322

In Canada:
Plant Maintenance Equipment, Ltd.
Vancouver, Toronto, Montreal

MIAMI STANDARDIZES ON GAR WOOD-BUCKEYE

GAR WOOD-BUCKEYE 315, *owned by the city of Miami, cuts through coral rock for a six-inch water main. Note clean sides of ditch, precise placement of spoil pile.*

City Finds Buckeyes Best for Solid Coral

Whether you call it coral rock, keystone coral or Florida lime—it's hard—and it comprises 60% of the Miami terrain. Ditching through solid coral can wear out a set of rooter bits in a single day. This is *really* tough ditching, and to do it the city of Miami has gone exclusively Gar Wood-Buckeye.

Miami owns 10 Buckeyes. According to John Layton, Maintenance Foreman for the Miami Water Board, "Buckeyes are by far the best ditchers for cutting through solid coral. And they are the best *all-around* ditching machines we have ever used."

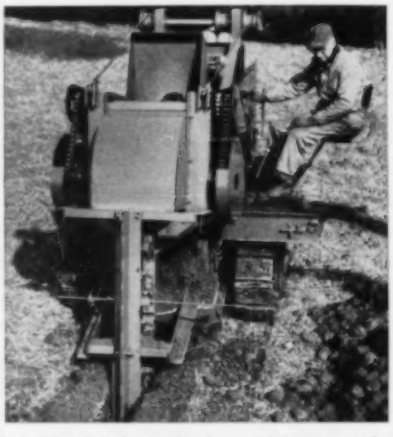
Another reason Buckeyes have proven superior in Miami is low maintenance. "Coral rock is plenty punishing," says Layton, "but it hasn't stopped our Buckeyes. They continually ditch at top-notch efficiency. And they require less maintenance than any other ditchers we've ever tried."

Buckeye ditchers are the most modern on the market. Every major engineering development in ditching for the past 68 years has been found first on Buckeye ditchers. Today Gar Wood continues to set standards in the field—giving contractors and municipalities across the country high production, low maintenance, and long, trouble-free operation.

MIAMI DITCHES SERVICE LINES WITH GAR WOOD-BUCKEYE 403

Ditching for service lines requires a highly maneuverable machine. Miami has found that the best machine for the job is the Buckeye 403.

This crawler-mounted, ladder-type ditcher operates well over all types of ground, digging a clean, straight-sided trench with square corners that require no hand forming. The 403's low ground bearing pressure—7.5 psi—won't damage lawns or walkways. A hinged crumber shoe folds back to allow digging up to foundation walls and for undercutting obstructions. The machine is transported easily and quickly on a tilt-bed trailer.



The Buckeye 403 is another example of Gar Wood's outstanding ditcher engineering—engineering to provide contractors and municipalities with specialized machines that dig far more ditch at far less cost.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

(Continued from page 203)

December 24, 1958. Contracts were awarded as follows:

- **G. M. Ferris, Athens, Tenn.—contract for the water treatment plant, $216,815.24 and for the interceptor sewer, $146,060.05.**
- **Donnell-Mullican Construction Co. of McMinnville, Tenn.—contract for the sewage treatment plant, $336,991.**

Both plants were complete in only 411 days. We put the water plant into service on April 16, 1960 and placed the sewage-treatment plant in service one week later.

While there is some grumbling, most of our citizens realize the need for the program and pay for it willingly through the monthly charges shown in the table on page 200.

We are well satisfied with our efforts to provide the city with modern water and sewerage facilities; for, as Mayor Oates said, "What we have done will affect the future of our entire community. We must not only think in terms of today's needs, but also of the future needs of new families and new industries. In no other field can we go more astray by being 'penny wise and pound foolish.' Adequate water and sewerage facilities for Sweetwater have taken years of planning, hard work and money. It has been a big challenge—and we have successfully met it." Today, the public water supply "approved" signs are up again at the city limits. ◄◄

Radio Control

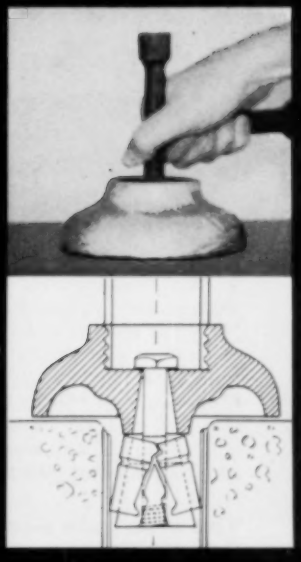
The Wayne County (Mich.) Road Commission has expanded its radio traffic-control system by installing 20 Motorola receiver-decoders in the Detroit area to bring traffic signals at 50 intersections under radio control. The Wayne County system, which went on the air in April 1958, is both the country's first 960-megacycle radio traffic-control network and Motorola's initial installation in the field. ◄◄

Condominium Urban Renewal

A new 98-unit town-house development is going up in Richmond, Va., near the central business district. This improvement, to be known as Hartshorn Homes, is believed to be the first residential development in the country making use of the "condominium" principle of ownership. Under this concept, the buyers of homes become common owners of all the community land in the development, including recreation areas and landscaped scenic areas. It is the first such project to be approved for FHA mortgage insurance. The project is being built by the Reynolds Metals Company and the Viking Development Corporation. The City of Richmond is contributing one-third of the cost of the project, while the Federal government is contributing two-thirds.

The Richmond development is aimed at the lower-priced market. Its homes—all three-bedroom, 1½-bath rowhouses—will sell for $10,950 under FHA mortgage financing. The financing plan approved by FHA provides a down payment of $300, with monthly payments of $81.50. This payment includes an assessment of about $3 for maintenance of common areas and community facilities, among which is a 30-by-60-foot aluminum swimming pool.

Reynolds has five other urban-renewal developments soon to reach the construction stage; they are in Cincinnati, Ohio, Kansas City, Kan., Kansas City, Mo., Philadelphia, Pa., and Washington, D. C. ◄◄



Return those rusted, bent or broken meters to profitable service in

Minutes

NO DIGGING—NO JACK HAMMERS
The **FISCHER BASE** is made of the finest high-strength aluminum with a patented steel locking device.

LOW COST—EFFICIENT—GOOD LOOKING
The **FISCHER BASE** not only eliminates the costly labor of repairing the rusted, bent or broken parking meter standards but quickly returns out-of-order meters to profitable service.

EASY INSTALLATION
The **FISCHER BASE** is easily installed—no assembly necessary, unit shipped individually boxed ready for installation—a one man job—simple, easy to follow instructions.

FOR ADDITIONAL INFORMATION and PRICES WRITE TO:

FISCHER INDUSTRIES

P.O. BOX 153, MIDDLESEX, N. J.

PLainfield 2-0900

DIGGING • LIFTING

HANDLE WITH CASE *Utility*

LOADING • CARRYING

Wouldn't 2 or 3 utility tractors be better than one oversize rig?

If your work involves a large percentage of widely scattered jobs, chances are you could speed up your services considerably with a "fleet" of mobile, utility tractors. Remember, you can buy *two or three* Case 430 *Utility* machines for the price of *one* larger, hard-to-move outfit. So, depending on how many units you need for *heavy* work, it will pay you to replace a few of your big rigs with a "fleet" of Case 430's. Thus the same investment will give you more equipment to work several projects at once . . . handle scattered service complaints fast . . . speed scheduled maintenance.

You also gain exceptional job versatility by choosing Case 430 *Utility* tractors. For example, you can specify 2 or 3 combination machines, equipped with backhoe and loader — for trenching, ditching and drainage installations. In addition, you might order several high-output loaders for stockpile and snow removal work. And maybe, a couple loader-mower tractors for alternate loading, mowing jobs. All machines, incidentally, can be fitted with *additional* quick-change loader-arm and rear-hitch attachments for added job flexibility.

Husky-built Case 430 provides strong dig-power for backhoe and loader work with *high-torque Case-built gasoline or diesel engine.* Powerful backhoe cuts 10′ deep, digs over 15′ from pivot, swings 180° with foot-pedal control for smooth, fast dig-and-dump. High-lift loader lifts up to 1200-lb payloads . . . discharges with 8′5″ clearance for quick dump-and-go. Tractor-loader works detachable hydraulic-controlled 6′ center-mounted rotary mower, or side-mount cutter-bar mower. *(Note:* If you want a larger 14′ backhoe and 2000 lb loader, specify Case Model 530.)

Try 'em free on your work. Find out how Case *Utility* tractors can give more and faster service with no increase in your budget. Call your Case Dealer now for free demonstration. Or write J. I. Case Co., Racine, Wis., Dept F1561 for specifications.

CU-BL-291

Model 430 with Case-Danco 6′ center-mounted rotary mows ahead of rear wheels, to full tractor-width . . . cuts weeds and grasses low as 1″.

CASE®

J. I. CASE CO., RACINE, WIS.

Nashville's beautiful Capitol Hill is flanked by new buildings, attractive access drives and a wide expanse of landscaped lawns; U. S. 41 comes through the underpass (bottom) and joins the parkway (right).

Local residents saw the state capitol from the vantage point of these outdoor privies . . .

. . . while travelers entering Nashville formerly had this view of its blighted environs.

Nashville Upgrades City's Capitol Hill

Redevelopment brings a better tax base for its government and a new confidence to its people

By GERALD GIMRE and C. D. CAMPBELL*

The challenge to America's blighted cities is "renew or die," says Ben West, mayor of Nashville, Tenn.

Ten years ago, a row of unpainted, slant-roofed outdoor privies stretched like abandoned Confederate sentry boxes behind tumbledown brick-and-frame shacks, within view of the massive, 33-foot columns of the state capitol's west portico. Once-fashionable homes languished in decay. Some streets were as narrow as 30 feet, with grades ranging up to 20%. These lay dormant, avoided by most motorists. A seven-block-long, five-block-wide slum area was an eyesore to tourists driving north and south along U. S. 41, the main highway linking Chicago and Miami, and to rail passengers who circled the high embankment that bounded the area on three sides.

The city's early developers had thoughtlessly imposed a conventional gridiron street pattern upon the difficult slopes of Capitol Hill. The angular lay of the land and the proximity of underlying limestone effectively discouraged commercial development. There seemed little Nashville could do, for merely clearing the slums was not the solution.

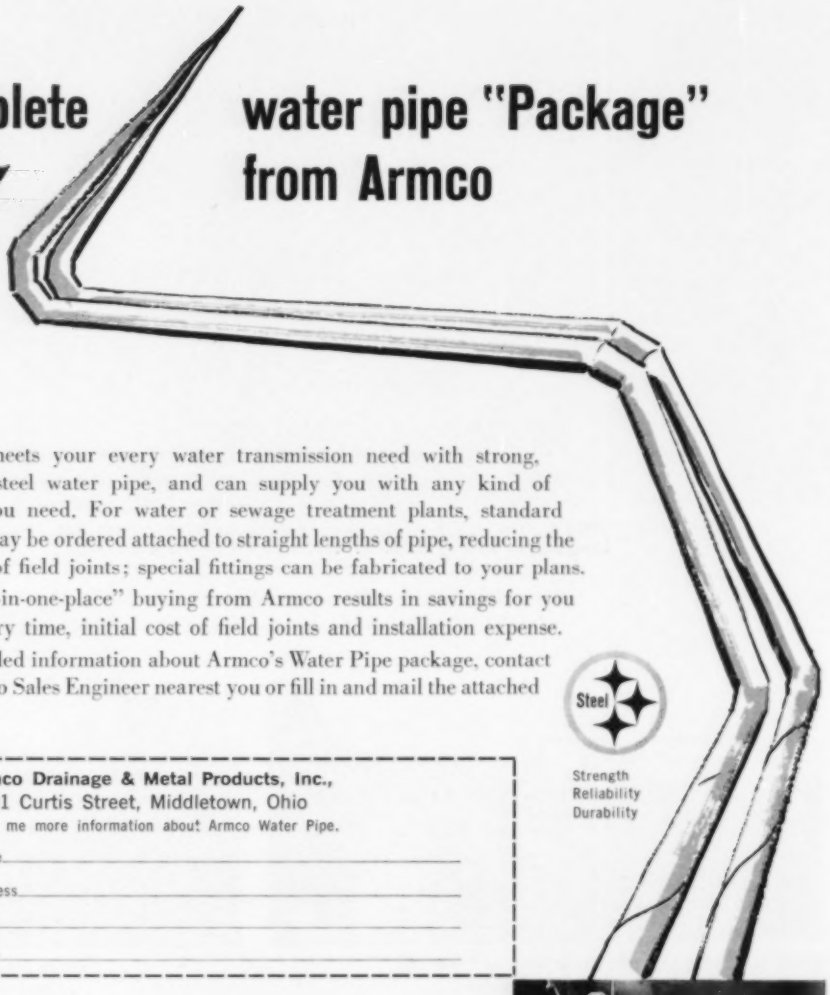
Then, late in 1948, impending legislation to provide federal assistance on slum clearance and redevelopment, set Nashville planners into

(Continued on page 209)

* Mr. Gimre is executive director of the Nashville Housing Authority and has worked on the project since its inception. Mr. Campbell is a public relations consultant to the City of Nashville.

Here's a complete water pipe "Package" from Armco

New steels are born at Armco



Armco meets your every water transmission need with strong, reliable steel water pipe, and can supply you with any kind of fitting you need. For water or sewage treatment plants, standard fittings may be ordered attached to straight lengths of pipe, reducing the number of field joints; special fittings can be fabricated to your plans. This "all-in-one-place" buying from Armco results in savings for you in delivery time, initial cost of field joints and installation expense.

For detailed information about Armco's Water Pipe package, contact the Armco Sales Engineer nearest you or fill in and mail the attached coupon.

Steel

Strength
Reliability
Durability

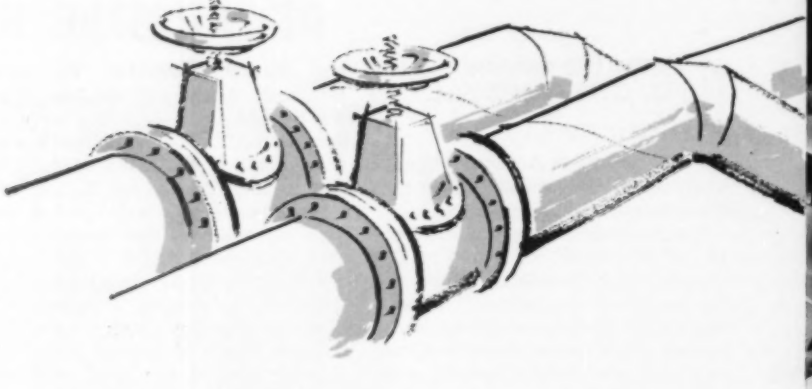
Armco Drainage & Metal Products, Inc.,
4101 Curtis Street, Middletown, Ohio
Send me more information about Armco Water Pipe.

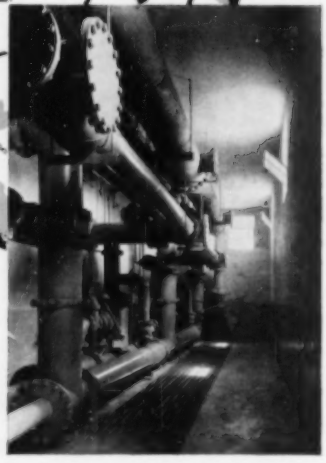
Name_____

Address_____

City_____

State_____





ARMCO Drainage & Metal Products

(Continued from page 207)

action. As soon as the federal-aid act was passed in July of 1949, the then mayor, Thomas L. Cummings, and officials of the Nashville Housing Authority (the city's redevelopment agency), asked the federal slum-clearance chief, Nathaniel Keith, and Governor Gordon Browning to tie in federal-state plans for Capitol Hill improvements with the city's proposed project.

Federal planning assistance was granted in 1950 and Clarke & Rapuano, New York consulting engineering firm, began to lay out an ambitious redevelopment program which would drastically alter the face of the Capitol Hill area. However, Korean War priorities and a heated city election delayed the project until newly elected Mayor West began to push the plan. A year following his election, Mayor West signed a loan-grant contract with the federal government securing an $8,300,000 loan to carry out the Capitol Hill Redevelopment Project.

Project Details

The project included buying 72 acres of land, clearing the dingy housing and outdated commercial structures, leveling the lower slopes and replacing the narrow streets with a semicircular, six-lane divided parkway, joined on the east with a new bridge across the Cumberland River and on the west with a sweeping new strip of U. S. 41.

More than half of the remaining land has been resold for private and public development. The city reports that tax receipts on the redevelopment property should jump from $45,000 to $237,417 or five times the total revenue produced by the entire area in 1952. Land sales are expected to repay about $5,000,000 of the project's cost.

In addition, the state extended its holdings atop Capitol Hill to 26 acres, reworked the drives and parking areas and constructed new buildings. The state has spent $15,700,000 on its projects, including a ten-story office building, a new library and archives building and a complete renovation of the century-old Capitol.

Relocation

A total of 301 families and 196 single residents, mostly Negro, have been relocated from the area. Many went into low-rent public-housing projects.

Today, Tennessee is completing its task of landscaping the hill surrounding its stately Capitol and modern structures, both public and private are rising along the scenic tree-lined parkway.

Nashville can measure many of the project's benefits in monetary terms but equally important is the new spirit of pride and progress that it has stirred in the community. For Capitol Hill was just the start of Nashville's renaissance. Today the $27,000,000 East Nashville Urban Renewal Project, the second largest in the nation, is moving forward, and plans are being drafted for redeveloping four more areas of the city. ◄◄

Identification Wallets

Rochester, N. Y., police and Monroe County deputy sheriffs now carry identification wallets with their photographs in color. Use of color identification photographs is new. The wallets with photograph, costing $2, were made by Rochester Laboratory, Inc., Webster, N. Y.

NEW DESIGN!
NEW EFFICIENCY!

Asphalt men designed it. Asphalt men tested it. The new Standard Asphalt Distributor has been field tested for two years on every type and grade of asphalt available, over three million gallons in all.

MODEL 424-56
PRESSURE DISTRIBUTOR

New power, New pump, All new features—as follows: A new "Econo-bar" spray bar in addition to the famous Standard Steel "Miracle" spray bar. New hydraulic spray bar lift. More convenient, easier to operate controls. Shorter, simplified piping to reduce heat bleed-off.

The Model 424-56 is built in 1000, 1250 and 1500 gallon capacities as standard and can be furnished in other capacities, either truck or semi-trailer mounted.

Write for Catalog #RS1256 or see your dealer.

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS . . . SHELVING HARDWARE . . . AND AGRICULTURAL EQUIPMENT

Built to the Highest Standard

Standard Steel Works, Inc. NORTH KANSAS CITY, MO. PD-157

First Air-Conditioning Utility Will Serve Hartford Project

Air conditioning may be the next public utility provided for sale on a metered basis, if the practice established in the Hartford, Conn., Constitution Plaza urban-renewal project establishes a trend. All buildings on this 12-acre site of a $35,000,000 redevelopment job will receive cooling from the local Hartford Gas Company just as they obtain water, gas, electricity and steam.

This downtown urban improvement is being built by F. H. McGraw and Co., New York, under an agreement negotiated with the City of Hartford.

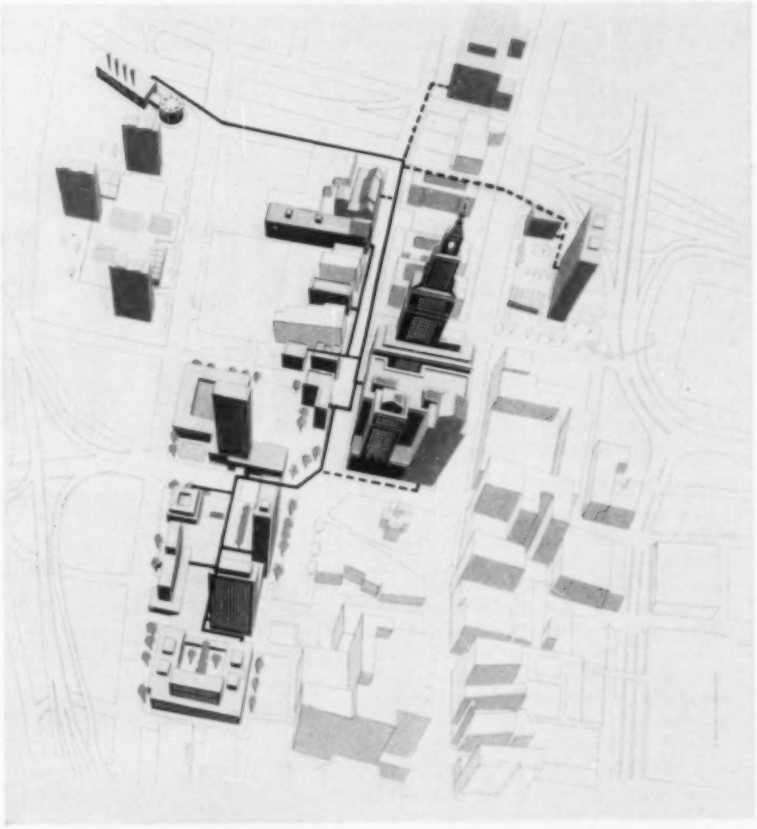
The gas company is investing about $3,000,000 for a central plant and two miles of steam and chilled water pipelines to establish this first-of-its-kind utility service. The Carrier Corporation will produce the huge water-chilling machines for the system. Chilled water-supply and return lines, which will average 18 inches in diameter, will extend from the plant.

Customers

The company initially will sell this service to a cluster of three office buildings, a hotel, a broadcasting facility, and a shopping center. It expects also, as air-conditioning customers, the main office building and a number of buildings operated by the Travelers Insurance Company of Hartford, sponsor of the redevelopment project. The company expects also to sell air-conditioning to two other portions of the redevelopment plan and other new and existing buildings in the area.

While this will be the first time that air-conditioning will be metered and sold as a public utility, it is not the first time that a central air-conditioning service has provided air conditioning to a large group of buildings. E. B. J. Roos of Seelye, Stevenson, Value and Knecht, consulting engineers for this work, reports that a number of manufacturing plants, shopping centers, and at least one airport, each with many buildings spread over a large area, have such installations operated by the Travelers Insurance Company of Hartford, sponsor of Constitution Plaza.

The Hartford Gas Company expects eventually to serve the Bushnell Plaza and Riverview projects, both involving high-rise apartment buildings as part of the redevelopment plan, and other new and existing buildings in the area, increasing the size of its central plant to at least 10,000 tons. The central plant building has been designed to permit this expansion in cooling and heating facilities.



A single cooling system, upper left, will pipe air conditioning on a metered basis throughout the new Hartford, Conn., urban-renewal project.

The new service will permit the gas company to increase its gas usage substantially during the summer months in order to produce steam-generated cooling, thus balancing the current heavy use of gas in winter for heating.

Savings

Mr. Roos reports that the central-plant approach demonstrates important advantages in a number of systems designed by his engineering firm. For example, a plant serving 20 buildings would eliminate the need for 20 boilers, 20 refrigeration units, 20 coal bunkers or fuel tanks, 20 smoke stacks and 20 men.

In addition to eliminating the need to duplicate equipment, the central-plant approach cuts first cost per ton for cooling equipment, can lower fuel costs through quantity discount, frees building space for more useful purposes, relieves the building operator of some of his capital investment and his mechanical responsibilities, and permits better smoke control.

The chief disadvantages affecting cost are the length of pipelines and the problems of putting them underground thus establishing the need for a concentration of air-conditioning requirements in one area. Such a situation frequently occurs in urban redevelopments, Mr. Roos declared. ◄◄

FOR:

HAULING
WINCHING
DELIVERING
PUSHING
PULLING
POWERING
ON ROAD
OFF ROAD
ALL WEATHER
SERVICE,

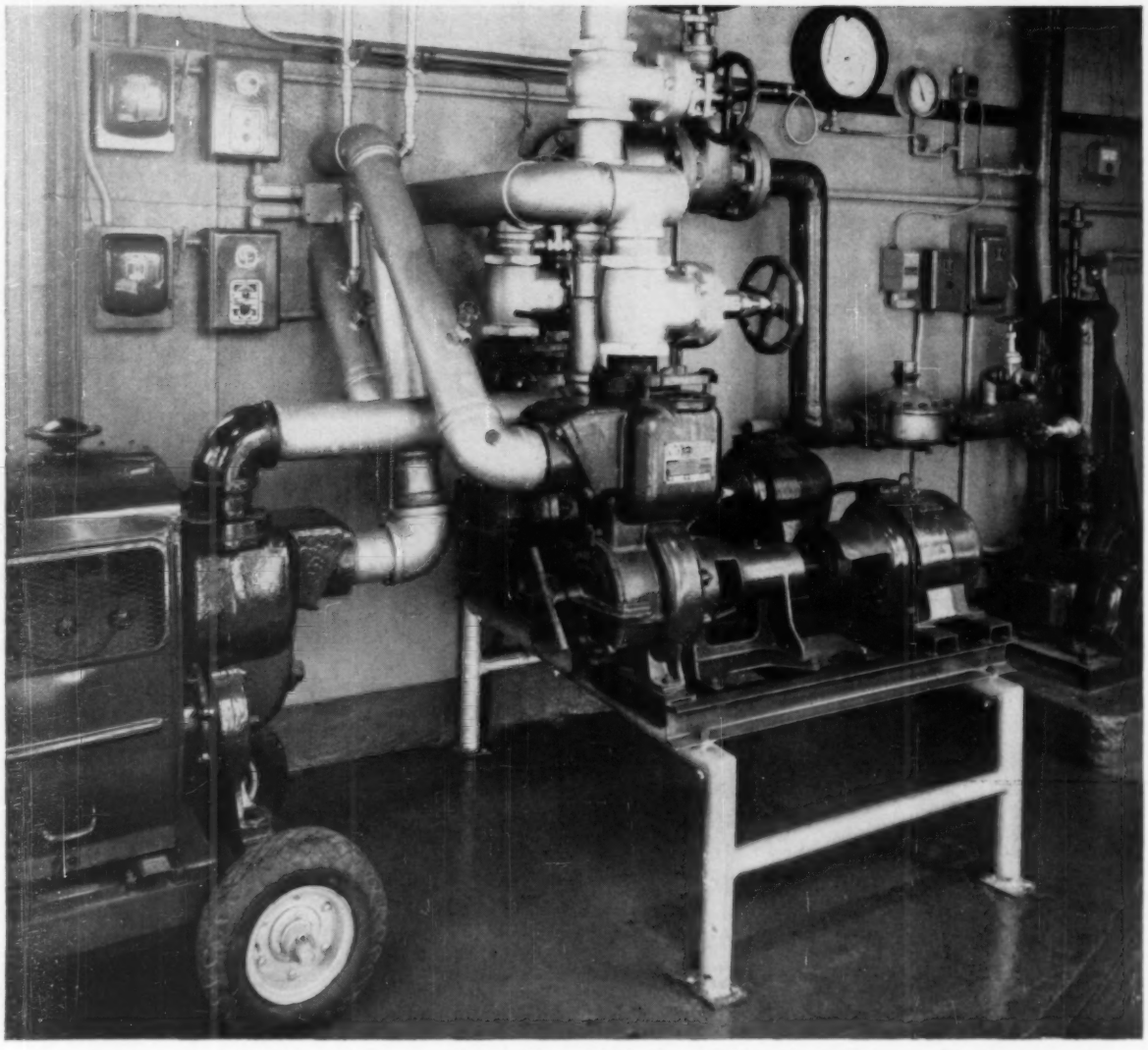
GET A

'Jeep'® FLEET!

If there's a job to be done, there's a 'Jeep' vehicle to do it. A tremendous array of 'Jeep' approved special equipment handles thousands of specialized jobs. Traditional 'Jeep' ruggedness keeps 'Jeep' vehicles on the job years longer in any kind of weather, in any kind of "going" ☐ A 'Jeep' fleet is a sound business investment. Initial cost is low. Maintenance costs are low. And resale value is amazingly high. In fact, a two year old 'Jeep' Universal sells for up to 90% of original list price ☐ Find out about the 'Jeep' vehicles that are specifically designed to meet your needs. Write to R. J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.

'JEEP' FLEETS—FROM THE WORLD'S LARGEST LINE OF 4-WHEEL DRIVE VEHICLES

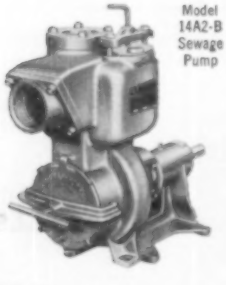
Willys Motors, Inc., Toledo 1, Ohio. One of the growing Kaiser Industries.



"8 years, going on 9—w/out trouble!"

That's GORMAN-RUPP PUMPS for you!

Among other pleasant attributes, Chas. Cusson Ltd., of Montreal, Quebec, is a valued Gorman-Rupp distributor. When they built their building in 1952 (and it's a model of its kind) they put in reliable self-priming, solids-handling Gorman-Rupp pumps for sewage sump operation. And wouldn't you call 9 years of uninterrupted service — without a moment's trouble — pretty fair justification?



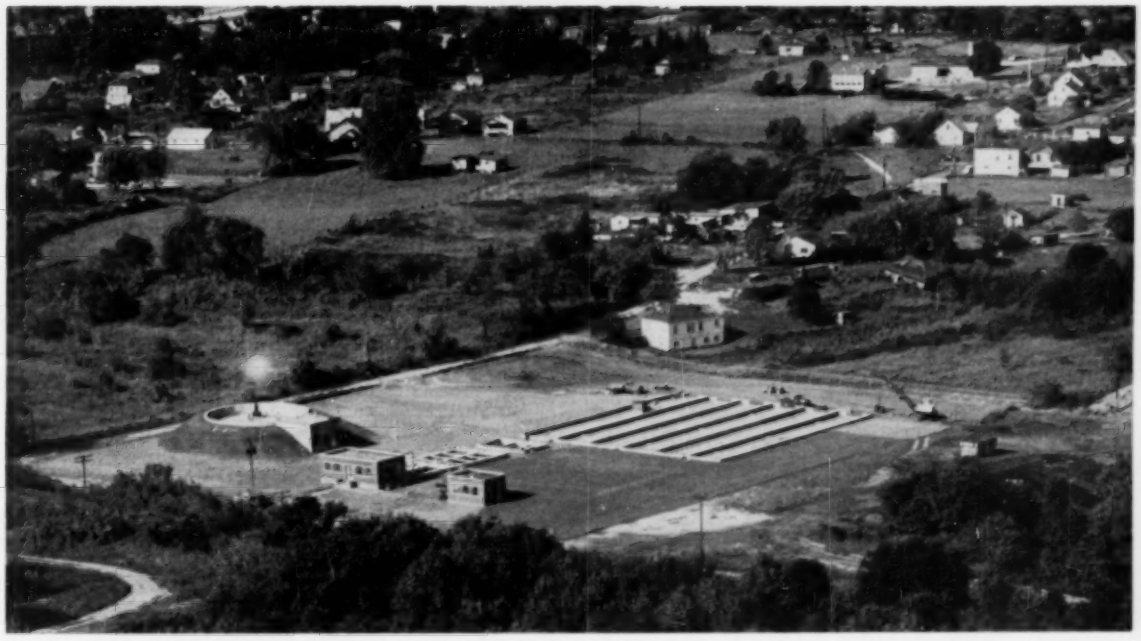
Model 14A2-B Sewage Pump

As illustrated above, two motor-driven pumps are paired on the line. For standby they used an engine-driven pump, solidly piped up. All three pumps are heavy duty. All are self-priming. The regulars are solids-handling, with quick-removable endplates. That means easy cleanout and back on the line again in minutes, not hours or days.

These are the sewage pumps that you can install *high and dry*. Or, in a dry well, if desired. They're low in first cost, low in installation cost, easy to service and maintain. • *Call your Gorman-Rupp Distributor, or write us direct.*

2934

THE GORMAN-RUPP COMPANY
305 BOWMAN STREET MANSFIELD, OHIO
Gorman-Rupp of Canada Ltd., St. Thomas, Ontario



The proximity of residences makes good operation a "must."

Sewage Plant Features Pre-Fab Lab

Laboratory package contains everything necessary to perform all required tests

By **I. B. EVANS**
Superintendent
Dunbar, W. Va.

Dunbar's new sewage-purification plant features a "package" laboratory that strikes a new note in simplicity and convenience. The laboratory provides all materials and instructions necessary for the analysis of influent, effluent and digester products.

The new plant, designed by Kelley, Gidley and Staub, Inc., furnishes primary treatment and has a capacity of 1.5 mgd. Constructed at a cost of $306,319, it will accommodate a future population of 15,000.

Lab Equipment

The Fisher-Hatfield Sewage Testing Unit, named for Dr. William Hatfield who was superintendent of the Decatur plant for 30 years, contains the exact amount and quality of equipment necessary to conduct waste-water-analysis tests using standard methods. Neatly and systematically organized by specific tests, it enables new personnel without prior analytical experience to learn the various standard procedures quickly.

The organization of the unit lessens the time usually required for the customary determinations of pH, acidity, alkalinity, solids, residual chlorine, chlorine demand, biochemical oxygen demand and volatile acids. One particularly desirable feature is a dual water fixture which permits distillation and water vacuum work to proceed simultaneously at the same sink.

The laboratory package consists of a sink unit, five feet wide, and a three-drawer unit which is four feet in width. Movable compartments in the 18-inch-deep-by-8-inch-high drawers contain the testing equipment, grouped for the various operations. The sink unit has a seamless, stainproof, Durcon basin, a work top grooved for drainage, and a glassware rinser. When they are placed side by side, the two units stretch out to a length of nine feet.

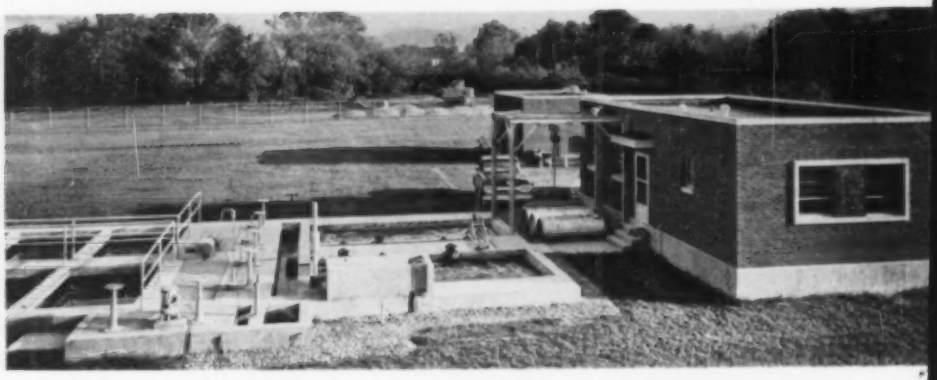
To supplement the pre-packaged laboratory, we purchased a matching steel wall case, drainboard and table. These extra Fisher-Hatfield facilities provide additional storage and sufficient working space to make the room more than just a laboratory.

To deliver the sewage to the plant site, the city constructed 4.4 miles of sewer and force mains, ranging in size from four to 18 inches, at a cost of $463,772. This interceptor system also includes six lift stations varying in capacity from 30 to 250 gpm. All but one of these are of the pneumatic ejector type.

At the plant the sewage first flows through a Chicago Pump Company comminutor which screens out and grinds up the coarse solids. After grinding, these solids return to the sewage stream. A manually cleaned bar screen provides for temporary or emergency use when the comminutor is out of service.

Three Chicago Pump Company vertical centrifugal pumps lift the

(Continued on page 214)



The block and tackle on a rigid frame easily unloads the heavy chlorine cylinders.

(Continued from page 213)

liquid from the wet well to start its journey through the plant. Automatic Healy-Ruff Company controls start and stop the 500-gpm, the 750-gpm and the 1,000-gpm pumps as dictated by the level in the wet well.

The pre-aeration tank has twin compartments with swing-type air diffusors suspended from a central dividing wall. Each compartment measures 20 feet by 14 feet by 9.25 feet at the side wall. Two axial flow compressors, each rated at 159 cfm at 4.5 psi and controlled for manual operation, supply the air. A four-inch air lift pump raises the grit to a separation box for dewatering. We bury this grit. The Chicago Pump Company furnished all of the pre-aeration equipment.

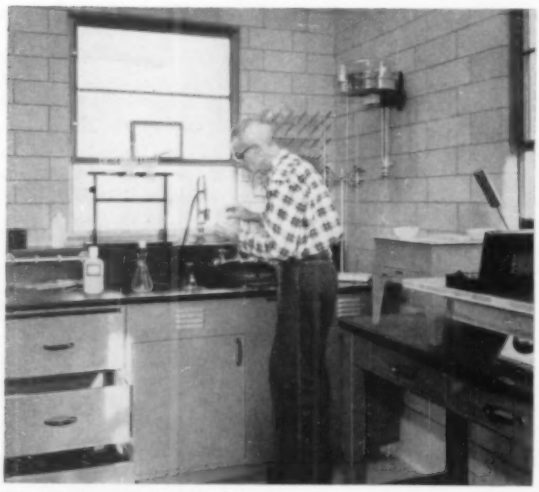
Two rectangular clarifiers, each 40 feet by 14 feet by 10 feet deep at the side wall provide, in conjunction with the aeration tanks, two hours settling at the maximum flow rate. A straightline Link-Belt sludge collector accumulates the heavy material which settles to the bottom of the tanks. We draw the scum off once or twice per day and pump it to the digester. A 100-gpm vertical open-shaft, Scru-peller pump forces the raw primary sludge to the digester.

Chlorination

The settled sewage overflows from the primary clarifiers to the chlorine contact basin. An automatically-operated, manually-controlled Wallace & Tiernan V-notch chlorinator permits application at four different rates varying from 20 to 200 pounds per 24 hours. The operating raw-sewage pumps at the lift station control the rate of chlorine feed. The use of one-ton cylinders reduces chlorine costs. After chlorination the effluent discharges to the Kanawha River. An indicating, totalling and recording B-I-F Industries flow meter, located at the chlorine contact basin outlet, measures the rate and volume of the flow.

The 300,000-gallon, floating cover digester meanwhile reduces the raw sludge and scum to a stable, non-offensive product. A 250,000-BTU-per-hour Pacific Flush Tank Company heat exchanger located in the control building circulates a mixture of digester liquor and raw sludge to provide optimum temperatures for digestion. The burning of digester gas powers this operation in addition to furnishing heat to the control building.

A 100-gpm vertical centrifugal bladeless pump delivers digested sludge to open sludge-drying beds for dehydration. The street department accumulates and transports the dehydrated sludge to the landfill for disposal. We anticipate the day when the sale of the sludge for a soil conditioner will pay for this portion of the operation. ◄◄



The pre-fab lab is complete and well organized.

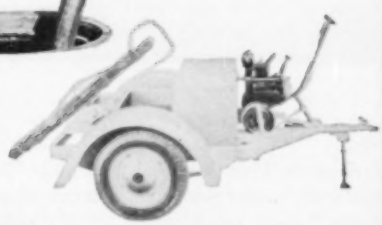
Movable compartments in the drawers group materials for individual tests.

...what are your

Sewer Cleaning Problems?

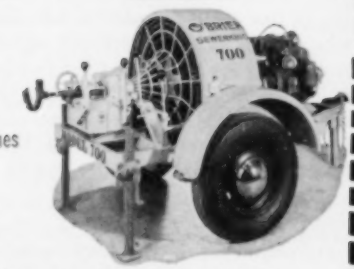
Solve them all with POWERIZED O'Brien EQUIPMENT

O'Brien Power Rodder 1000



O'Brien Power Rod Drive

Bucket Machine and Dumper



Sewerking Cable Machines

O'Brien makes a complete line of sewer cleaning equipment. Every unit is the exact answer to a specific cleaning requirement and reflects O'Brien's long experience and familiarity with the field. Economy, efficiency, and convenience of operation are built into every piece of equipment.

O'Brien Power Rodder:

matchless driving and pull-back power, unexcelled for bucket threading and general sewer maintenance. 1200 ft. capacity can be used with either 5/16 or 3/8-inch rod. Equipped with automatic safety throw-out, positive rod drive, and footage meter.

Bucket Machine and Dumper:

featuring exclusive O'Brien hopper. Bucket dumps into hopper; after repeated bucket travel, full hopper is dumped into truck. Use of hopper eliminates truck and traffic tie-up during cleaning operation which relieves truck for many hours of other duties while hopper is being re-filled. 9 hp., 16 hp., and 25 hp. models available.

Sewerking Cable Machines:

compact, powerful, economical cable rodder. Ideal for removing roots, grease, sludge and general sewer waste. Four Sewerking cable models available with capacities from 250 to 600-feet.

O'Brien MFG. CORP.
5633 Northwest Highway, Chicago 46, Ill.
Phone ROdney 3-7433

O'BRIEN MFG. CORP.,
5633 Northwest Highway, Chicago 46
Send me full information on

☐ O'Brien Power Rodder ☐ O'Brien Cable Machines
☐ O'Brien Bucket Machines ☐ O'Brien Power Rod Drive

City ..... State .....
Address .....
Attention .....
Title ..... Dept. .....
Dept. AC661

2 NEW FITCHBURG CHIPPER FEATURES

Give Your Engine Longer Life
Save Gas, Add Safety

1 **EXTRA PROTECTION** for your crews with this NEW SAFETY STOP SWITCH that stops all moving parts of the chipper within seconds. Switch is within easy reach at rear so operator can flip it without moving from feed position. An important new feature of the Fitchburg Chipper, *already considered safest* because it has no hard-to-control flywheel.

2 **GREATER ECONOMY** with this NEW SOLENOID SWITCH* which allows the operator to quickly idle the motor between actual brush feedings. With the motor idling, you save on gasoline and engine wear; and there's less noise, which pleases the public. Your operator can use the switch easily because it is at the rear and handy.

CHIPPING IS SMOOTHER and faster with a Fitchburg because of its exclusive *spring activated feed plate*. This patented feed plate "gives" *automatically* under pressure. You can chip even large limbs (up to rated capacity) without killing the engine. And your crews are safer because the feeding action is more positive, smoother, with less whipping of the brush.

CHIPPING IS MORE EFFICIENT with a Fitchburg. The exclusive feed plate allows wood to be chewed up in small bites. This takes less power, and the engine can be run at lower r.p.m.—which is more efficient, saves you gas and cuts engine wear.

TROUBLE-FREE Fitchburg Chippers stay out of your shop so you don't lose valuable man-hours. These rugged machines are the choice of tree surgeons, line clearance contractors and others—men who depend on Chippers day after day to make money. Blades are made from special alloy steel to hold a keen edge for a long time, even with hard use. Fitchburg Chippers are well-engineered, come in four sizes to meet your needs: the largest handle limbs as thick as seven inches with ease.

A FREE BOOK "Chip Dollars" should be in your hands if you deal with brush disposal. 20-pages. Write for free copy—Dept. AC-16.

*optional equipment

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Projecting Signs

NORTH CAROLINA. *Little Pep Delmonico Restaurant, Inc.*, v. *City of Charlotte*, 113 South Eastern (2d) 422 (Supreme (highest) Court, April 6, 1960).

In this case the Charlotte City Council adopted an ordinance forbidding the continuance of projecting signs over the sidewalk in one specified part of the downtown area; and this ordinance was challenged by some 100 affected merchants who had erected such signs there in conformity with official permits.

In the opinion the Court granted a temporary injunction on the ground of "apparent invalidity," with the statement that such a police power ordinance "must rest on something more substantial than mere aesthetic considerations." The opinion did not deal with the further allegation (passed upon below) that the ordinance was discriminatory in exempting establishments near by, where the character of business and width of the street were allegedly the same.

This opinion would appear to be contrary to established precedent on signs projecting over part of a public street. It is orthodox doctrine that something else is needed beside aesthetic considerations to regulate signs located within private property; but signs projecting in the air over a street are generally held to be in quite a totally different legal category—i.e., as invasions of public property, permits for which can have no greater status than that of licenses, revocable at will. Therefore, according to the prevailing law*—assuming that title to the bed of the street is in public ownership—all that is legally needed to get rid of a projecting sign is Carrie Nation and her axe, plus (presumably) some reasonable form of notice to satisfy procedural due process.

* See for example *Mallory* v. *New Rochelle*, 268 New York Appellate Division 878, 53 New York Supplement (2d) 643 (1944), affirmed by memorandum, 295 New York 712 (1946)

Architectural Control and Historic Districts

MISSOURI. *State ex rel. Magidson* v. *Henze*, 342 South Western (2d) 261 (Court of Appeals (intermediate court), January 17, 1961).

RHODE ISLAND. *Hayes* v. *Smith*, 167 Atlantic (2d) 546 (Supreme (highest) Court, February 3, 1960).

In the Missouri case, the zoning regulations of University City (just outside St. Louis) provided that all new buildings must be reviewed by a local architectural-control commission in order to maintain "compatibility in the exterior design and appearance" of buildings, on the ground that otherwise new buildings might adversely affect the desirability of nearby residences, impair property values, result in deterioration, and deprive the city of tax revenue. In this case a proposed group of four adjacent single-family houses was turned down by the Commission, explicitly on the ground that the interior area (in square feet) of the houses involved was smaller than the existing houses in the neighborhood, and apparently with no additional findings on the exterior design. This decision was challenged on constitutional grounds, particularly on the ground that there was no real standard to guide the Commission.

In the opinion, the Court held that it was "quite obvious" that the enabling legislation did not give the city the right to impose aesthetic standards on new buildings. (Incidentally the enabling legislation, taken from the Standard Enabling Act, included an authorization to preserve "features of historical significance.") Moreover, the Court held that the ordinance did not contain any standards which would insure uniformity of application.

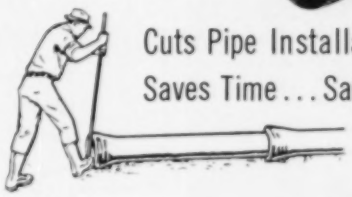
In the Rhode Island case, an historic district was established in South Kingstown, and a Commission was established to review proposed new buildings in this district. In such a review, the commission was instructed to give consideration to "historic and architectural value and significance," the relationship between the exterior architectural features of the building and the surroundings, and "general compatibility" with the area. The ordinance explicitly disclaimed any attempt to limit construction to any one period of architectural style—an unusual, and very sensible, provision. In this case, the local Congregational Church proposed to build a brick addition, apparently intended to expand its church school, be-

(Continued on page 219)

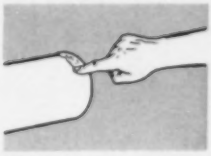
The APCO ALTITE JOINT

Underwriters Approved — Protected by Patent

Insert rubber gasket in bell end of pipe. You can't put it in wrong.



Cuts Pipe Installation Costs
Saves Time . . . Saves Trouble

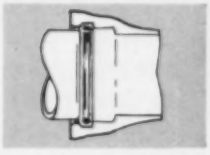


Lubricate lightly to reduce friction.

ALTITE JOINTS were developed by APCO to reduce pipe installation costs — *and they do.*

— and here is why:

- Can be assembled more quickly than other conventional joints.
- Assembly is easy, even for inexperienced workers.
- Less equipment — smaller crews required.
- No heavy accessories needed. Only one *reversible* gasket that can't be installed wrong.



Insert plain beveled end — there are no grooves, ridges or tips on gasket to interfere.

Investigate the APCO
ALTITE® JOINT
for the best connection you'll ever make!

Small amount of pressure forces end to bottom of socket, completing the tight joint.

ALABAMA PIPE COMPANY
A Division of Woodward Iron Company
ANNISTON, ALABAMA • Phone ADams 6-7601

Write for your copy of Catalog No. 54

Sales Offices
CHICAGO: 122 S. Michigan Avenue
NEW YORK: 350 Fifth Avenue
KANSAS CITY: Suite 950, 1006 Grand Ave.
DETROIT: 18505 W. Eight Mile Road
SOUTH GATE, Calif: 5335 Southern Ave.

FRANKLIN FABRICS UNIFORMS

373

Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

TO BE SURE, SPECIFY

FRANKLIN WORSTEDS

for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.

WOOD'S "Cadet"

economy models E60-EM60

ROTARY MOWER

MODEL EM60

Mounts on any standard 3 pt. hitch equipped tractor. Puncture-proof tail wheel optional. Full length side skids standard on all Cadet models.

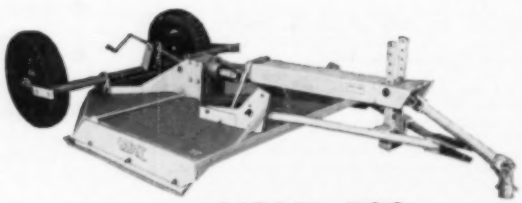
IDEAL FOR

HIGH SPEED MOWING
LIGHT BRUSH CLEARING

The Wood's Cadet is one rotary that's engineered and built to perform . . . *and priced to* SELL!

The Wood's E60 and EM60 feature the exclusive "dual-keel" construction that builds-in ruggedness that no other economy rotary mower can equal.

The patented Wood's "quick-change" blade feature offered as standard equipment on the Cadet enables the operator to change the free swinging blades in minutes and requires no special tools.



MODEL E60

Available with standard 15" wheels or laminated puncture-proof tires (16" diameter). Pull type E60 wheel tread may be set at 50" or 76". Equipped with 3-joint Universal drive, allows sharper turns, reduces wear and cuts maintenance cost.

Write for full details

WOOD BROTHERS MFG. CO.
54106 South 4th Street Oregon, Illinois

SPECIALISTS IN THE MANUFACTURING OF TRACTOR POWERED ROTARY MOWER SHREDDERS

(Continued from page 217)

tween the existing church and parish house—both of which were wooden clapboard buildings. The Commission turned down the proposal by a divided vote, but on appeal the local Board of Appeals approved it—noting that the architectural style for the proposed structure was not too different from the existing buildings, and that it would not be visible from the area of greatest historic importance.

In the opinion, the Court upheld the Board of Appeals, which was held to be authorized to consider the question *de novo*. The reference to "general compatibility" was held to be the key point under this ordinance. The Court noted that there was no evidence in the record of the historic or architectural value of this church.

While there are special facts in each instance, these two cases reflect the general trend of American law in relation to architectural control. Broad schemes of architectural control applying to all new buildings have generally been regarded rather dubiously by the courts, primarily because of the very real difficulty of preparing meaningful standards to control administrative discretion in such regulations. The Missouri decision is therefore clearly correct, particularly since the actual situation involved no finding of bad architecture but merely a difference in house size—a quite separate subject, on which the American courts have split violently! On the other hand, the American courts have tended to uphold regulations applying to historic districts, particularly if carefully drawn, as here. In this case, the local authorities were being very careful in applying the regulations; but the Rhode Island court clearly regarded the ordinance as valid in general.

---

1. Compare *Frischhorn Construction Co.* v. *Redford Township*, 315 Michigan 556, 24 North Western (2d) 209 (1946), and *Medinger Appeal*, 377 Pennsylvania 217, 104 Atlantic (2d) 118 (1954), with *Lionshead Lake* v. *Wayne Township*, 10 New Jersey 165, 89 Atlantic (2d) 693 (1952), appeal dismissed, 344 U. S. 919 (1953).
2. See *New Orleans* v. *Pergament*, 198 Louisiana 852, 5 Southern (2d) 129 (1941); Opinions of the Justices to the Senate, 333 Massachusetts 773 and 783, 128 North Eastern (2d) 557 and 563 (1955).

Recodification of Phoenix Ordinances

The Phoenix, Ariz., City Council authorized the city manager to enter into an agreement with the Michie City Publications Co. of Los Angeles, Calif., to recodify the city ordinances. Recodification will cost $12,000 and will provide an up-to-date compilation of city ordinances properly indexed in a loose-leaf book. Five hundred copies of the revised City Code will be supplied under the contract and additional copies will cost $7.50. The last recodification of the City Code was in 1951. Since then many new ordinances and revisions have been made, making it important to have an up-to-date record of existing ordinances in one book. Unlike the 1951 revision which was bound in book form, this revision will be issued in loose-leaf form permitting easy semi-annual or annual revision to keep the code book up-to-date. ◄◄

lower your costs on small sized trenching assignments

DIG IN FAST WITH A 77 TRENCHLINER®

Small main and service line work steps ahead quickly when you dig in with the Parsons® 77. It's not much wider than a yardstick, yet can cut 6″ to 18″ trench down to 5-ft. depths at speeds up to 21 lineal feet per minute.

The 77 has 32 hi-lo digging selections — a speed for most profitable penetration in any ground. It's easy to use, move, and maintain. See your nearby Parsons distributor for details or write for bulletin.

Close quarter work no problem here! 77 can move within a track's width of side obstructions — speed your trenching in closest quarters. Removable seat.

P116

PARSONS COMPANY
NEWTON, IOWA

A Division of KOEHRING Company

Del Webb's fabulous "SUN CITY," Arizona chooses... RAIN BIRD

Sun City's Recreation Unit No. 1, shown here, features the Arts and Crafts Center, shuffleboard courts, bowling greens, swimming pool and cabanas. The recreational grounds and 18 hole Championship golf course are protected and kept green by quality Rain Bird products. Rain Bird #37 Rotor Pop-Ups shown, while rose garden in foreground is irrigated by Rain Bird Bubbler Heads.

Rain Bird 37 Rotor Pop-Up

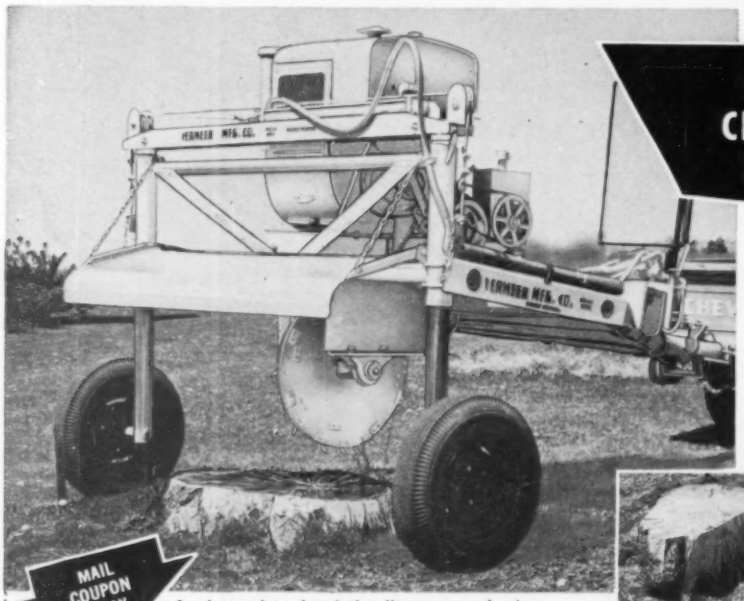
Nearly 3000 modern "Retirees" are living and enjoying an active retirement in this completely planned community near Phoenix. Much of the beautifully landscaped grounds and golf courses is irrigated by Rain Bird underground Systems. Living amid the blooming roses, rich green turf and full shrubberies, Sun City residents find it difficult to believe that a cotton field occupied the area a year ago. To protect the huge investment in grounds and landscaping, Sun City relies on Rain Bird.

Protect your property and landscaping investment with custom-engineered Nelson-Rain Bird Underground Sprinkling Systems.

5799

IN MIDWEST AND EAST:
RAINY SPRINKLER SALES
DIVISION OF L. R. NELSON MFG. CO., INC.
609 West Lake Street
Peoria, Illinois

IN WEST:
NATIONAL RAIN BIRD SALES
AND ENGINEERING CORPORATION
P. O. Box 547
Azusa, California



HERE'S HOW 800 CITIES SOLVED THEIR STUMP PROBLEM...

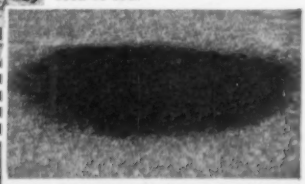
Original Low Cost VERMEER

POW-R-STUMP CUTTER

Rips Stump To Shreds In Minutes!

You'll save hundreds of back-breaking man-hours and thousands of dollars annually . . . with a Vermeer Pow-R-Stump Cutter. The choice of tree experts everywhere! It's the modern way, the economical way to remove ugly stumps. Mail the coupon for all the details . . . and a FREE demonstration.

Photos show how big revolving cutting wheel rips stump to chips . . . down to 10" below the ground. Dirt is replaced, chips removed and area is ready for seed or sod.



MAIL COUPON TODAY

Send complete descriptive literature and prices on your Pow-R-Stump Cutter to

NAME.....

TITLE or DEPT.....PHONE.....

FIRM.....

ADDRESS.....

CITY.....STATE.....

VERMEER MANUFACTURING COMPANY

1452 W. WASHINGTON, PELLA, IOWA

Registered Under U. S. Patent No. 2912022

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Contracts—
Waiver of Irregularity in Bid Valid

Where borough reserved right to waive informalities in bid and lowest bid was submitted with uncertified check and borough waived this irregularity, held awarding contract to such bidder was not substantial variance and contract valid. *P. Michelotti & Sons, Inc.* v. *Fair Lawn*, 152 A.2d 369 (N.J. Super., App. Div., June 10, 1959)

Pensions—Retirees Get Share of Uniform Allowance

Where city adopted ordinance to reimburse firemen and policemen for maintaining uniforms with payments varying as to amount of on-duty time, held this was compensation and retired employees were entitled to percentage of compensation paid to active members. *Anderson* v. *City of Long Beach*, 341 P.2d 43 (Cal. App., July 6, 1959)

Police—Liability Insurance—Auto Patrolman Covered

Where city automobile liability policy excluded coverage for death of employee of insured and police officer riding as passenger in police car operated by another officer was killed, held such officer was not "employee" and policy afforded coverage to city. *City of Albany* v. *Standard Accident Insurance Co.*, 187 N.Y.S.2d 242 (N.Y. Sup. Ct., App. Div., June 17, 1959)

Sidewalks—Injury From Fall—City Not Liable

In personal injury action resulting from fall caused by alleged depression in sidewalk consisting of drop of three fourths of an inch below level of walk due to sinking of metal junction box, held city not liable since box was part of sidewalk. *McChain* v. *City of Fond du Lac*, 96 N.W. 2d 607 (Wis., May 5, 1959)

Subdivisions—Rezoning After Plan Filed—No Effect

Where land was zoned permitting two-family dwellings when subdivision plan was approved and recorded and application for permits to build such dwellings was made prior to zoning amendment changing area to single-residence district, held denial of application for building permit invalid. *Smith* v. *Board of Appeals of Needham*, 159 N.E.2d 324 (Mass., June 12, 1959)

Water Rates—Discontinuance of Water Supply Upheld

Under ordinance acceptance of benefits of water supply of city made equitable owners of property who were not owners of premises when water was supplied the "persons liable therefor" within ordinance and remedy of cutting off water supply of premises for nonpayment of prior owner's bill was available to city. *Cocanig* v. *City of Chicago*, 166 N.W.2d 291 (Ill., App. Ct., 1st Dist., 3rd Div., Apr. 14, 1960)

Zoning—Extension of Non-Conforming Use Denied

Where landowner operated filling station as non-conforming use and in addition rented and sold trailers in connection with filling station business held trailer business is not customarily incidental to selling gasoline and such activity violates zoning ordinance. *Bennett* v. *Zoning Board of Adjustment*, 151 A.2d 439 (Pa., May 29, 1959)

Zoning—Powers of Board of Supervisors Defined

Where ordinance separately stated conditions for conditional uses and variances and variance sections gave board of supervisors authority to grant a variance without approval of planning commission and conditional use sections contained no provision for such overriding action by board, held it was improper to construe ordinance as permitting board to grant conditional use permit contrary to recommendation of planning commission. *Tustin Heights Ass'n.* v. *Board of Supervisors*, 339 P.2d 914 (Cal. App., May 25, 1959)

Zoning—Residential to Business Upheld

Where one borough rezoned certain property along heavily traveled highway from residential to business district and nearby areas were used for business but part of such property bordered on a second borough, held rezoning was reasonable. *Borough of Leonia* v. *Borough of Fort Lee*, 151 A.2d 540 (N.J. Super., App. Div., June 1, 1959)

LOS ANGELES *chose* STEEL PIPE *with* O-RING JOINT

Granada Pipeline Unit No. 3, built for the Department of Water & Power, City of Los Angeles, is the first major water pipeline to use "High Strength" steel plate with the new O-ring rubber gasket field joint. This 30,000 foot line through the San Fernando Valley, used 32 foot lengths, 49½ in. diameter pipe with ¼ to ⅜ in. wall thickness. Installation time of the O-ring joint proved to be 90% faster than welded joints and permits deflection up to 2° angle and longitudinal movement of at least one inch without leaking. Final hydrostatic tests showed practically 100% watertight at normal pressure.

. . . every length was hydrostatically tested in the shop to AWWA standards!

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

STEEL PLATE FABRICATORS ASSOCIATION

RECENT CITY MANAGER APPOINTMENTS

B. J. Santoro
Mamaroneck, N. Y.

L. T. Harper
Hermiston, Ore.

J. W. Elwell
Rangeley, Colo.

S. E. Kennedy
Alamogordo, N. M.

Casey Fannin
Tyler, Texas

R. L. Black
Webster Groves, Mo.

WALTER R. BENSON, member of the Maine State Department of Audit, has been appointed manager of Houlton, Maine, succeeding Robert E. Curtis. Mr. Benson was previously manager of Lincoln and Eastport, Maine.

WARREN S. BENSON, assistant manager of Des Moines, Iowa, has been appointed manager of Tracy, Calif., suceeding Arthur Brewer.

RICHARD L. BLACK, chief administrative officer of Englewood, N. J., for the past six years, has been appointed manager of Webster Groves, Mo., succeeding Harold C. McClintock who died on October 3, 1960. Mr. Black was previously chief administrative officer of Bronxville, N. Y.

ROBERT C. BRYER, a local businessman, has been appointed manager of Snowden Township, Pa., succeeding James A. Ross.

A. L. BUNGER, former manager of Tempe, Ariz., has been appointed manager of Prescott, Ariz., succeeding Jack S. Branum.

ARTHUR H. DYKEMAN, SR., a member of the board of selectmen of Stoughton, Mass., has been appointed manager succeeding Robert J. M. O'Hare.

JOHN W. ELWELL, comptroller at Montrose, Colo., has been appointed manager of Rangeley, Colo.

CASEY FANNIN, manager of Columbia, Mo., has been appointed manager of Tyler, Texas, succeeding Clarence P. Stewart. Mr. Fannin was previously manager of Pittsburgh, Odessa and Bryan, Texas.

L. T. HARPER, assistant manager of Hutchinson, Kan., has been appointed first manager of Hermiston, Ore.

STANLEY E. KENNEDY, manager of Dalhart, Texas, has been appointed manager of Alamogordo, N. M., suceeding Rolla Buck.

MICHAEL SIDNEY LENROW, assistant manager of St. Louis Park, Minn., has been appointed manager of Westminster, Colo., succeeding Philip F. Roan.

ERNEST D. LINDSAY, former manager of Montebello, Calif., has been appointed the first manager of Stanton, Calif. Mr. Lindsay was previously manager of North Sacramento, Calif., and Durango, Colo.

CHARLES N. LONGHURST has been appointed first manager of Forest Hills, Tenn.

M. D. MCKEOWN, manager of Dairy Valley, Calif., for five years, has been appointed manager of Paramount, Calif.

IRVING G. MCNAYR, manager of Columbia, S. C., for five years, has been appointed manager of Metropolitan Dade County, Fla., succeeding O. W. Campbell. Mr. McNayr was previously manager of Montgomery County, Md., and Springfield, Mo.

KENNETH NEALLEY has been appointed first manager of Winterport, Maine.

ROBERT H. OLDLAND, manager of Champaign, Ill., for three years, has been appointed the first manager of La Mirada, Calif. Mr. Oldland was formerly manager of Santa Maria, Calif.

SAMMY LEE PHELPS, assistant manager of Perryton, Texas, has been appointed manager of Dalhart, Texas, succeeding Stanley E. Kennedy.

J. P. PILON has been appointed manager of D'Anjou, Quebec, Canada.

JAMES F. ROOSEVELT, administrator of Rahway, N. J., has been appointed administrator of Edison Township, N. J.

FRANK R. SAIA, administrative assistant to the Director of Administration, New Haven, Conn., was recently appointed the first administrator of Clementon, N. J.

BATTISTA J. SANTORO, councilman of the Town of Mamaroneck, N. Y., has been appointed manager of the Village of Mamaroneck, N. Y., succeeding William H. Johnson. He was previously trustee and mayor of the village.

ARCHIE SCRIBNER, manager of Thomaston, Maine, is the new manager of Meredith, N. H. Mr. Scribner was previously manager of Patten, Van Buren, Calais, and Old Town, Maine.

CHARLES SNOW has been appointed manager of Windsor, Newfoundland, Canada.

AFONS M. TAVARES, JR., executive director of the Industrial Development Department, Auburn, Me., has been appointed manager of Clark, N. J.

ROBERT P. WEATHERFORD, JR., executive director of Plan for Progress, Inc., Phoenix, Ariz., for three years, has been appointed manager of Kansas City, Mo.

ROBERT G. WHITE, administrative assistant, Pendleton, Ore., has been appointed manager of Sweet Home, Ore., succeeding Roy Eames.

ORIN F. NOLTING
Executive Director
International City Managers' Association

In-Service Training for Efficiency

In the suburban community of North St. Paul, Minn., the village manager, Orvil J. Johnson, and village department heads recently completed a course in supervisory methods that already is paying dividends. The course, entitled "Supervisory Methods in Municipal Administration," was prepared by the International City Managers Association.

The classes were conducted weekly on village time by a local high school instructor. Textbooks, furnished by the village, are now available for use by the supervisors. Lesson preparation was on off-duty time. Scheduled class time was an hour and a half.

The text discussed theories and problems that could be applied directly to North St. Paul. The study of psychology showed how to give orders and work with groups of people.

The subject of communications showed that the principal problem is to avoid giving improper or incomplete orders and reports. Eight lessons spent on various supervisory techniques included planning, coordinating, controlling and the various aspects of these techniques. One lesson studied the actual work distribution of the various municipal departments.

Another discussed the various procedures in the selection, placement, evaluation and rating of employees. The last stressed public relations in municipal government. ◄◄

Digging-out and loading 6-ft. curb sections is a fast, easy job with the "4-in-1" Bucket.

"the most useful single machine"

The City of Thomasville, N. C., has 120 miles of streets — 85% paved. It does practically all its own street construction and the present program involves 5 miles of streets — grading, widening, drainage, base material, curb-and-gutter, and resurfacing. One of its key machines is an H-30 PAYLOADER with patented Drott "4-in-1" bucket.

Public Works Director Joe F. Mitchell says, "It is the most useful single machine I have ever known for street work. It does jobs faster, saves hand labor and often does the work of several different machines. It has reserve power for hard digging, good load-carrying balance, and unusual operator visibility."

The Model H-30 is the smallest 4-wheel-drive PAYLOADER but has a full dumping clearance of 8′ 4″, 3000-lb. operating capacity and all the modern features of the largest models. Although introduced only a year ago, it has become very popular with public bodies, many of whom have already made repeat purchases. Your Hough Distributor is ready to show you how useful and valuable the H-30 or larger PAYLOADER models can really be. See him today, or write.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY – INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

Full of Big-Loader Features!

- Four-wheel drive
- Power-shift and power-steer with torque-converter
- 3 Speed ranges each direction to 25 m.p.h.
- 4-wheel, sealed hydraulic brakes
- Planetary final drives
- 43° bucket tip-back
- Powerful pry-out action
- Closed, pressure-controlled hydraulic system
- Only loader in its class available with Drott "4-in-1" bucket
- Snow plows, Back-hoe, Pick-up Sweeper and other allied equipment available

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.

☐ Send me Model H-30 PAYLOADER data
☐ Send data on other Models, and Allied Equipment

Name _____
Title _____
Dept. _____
Street _____
City _____ State _____

6-B-4

BESSIE ELLEN WOOD, CITY CLERK for the City of Solomon, Solomon, Kansas.

THIS NATIONAL SYSTEM pays for itself every year.

"Our *National** System saves us $600 a year... returns 100% annually on investment!"

—**City of Solomon,** *Solomon, Kansas*

"Our National System has reduced monthly billing time by 75%. With our previous method we had to make four individual postings of all accounts. We now do all posting in one operation, including the audit record. These features alone would make the System a profitable investment, but we receive many more fine benefits from our National.

"Costly errors have been eliminated because each bill and account is automatically proven when posted. Consumers appreciate the machine-printed, itemized record of their account. This billing machine also doubles as an adding machine. The 'Live' Keyboard feature saves time and effort for the operator. And no special training is required for fast, accurate operation of the System.

"The superior performance of our National System is saving us $600 a year, returning 100% annually on our investment!"

Bessie Ellen Wood
City Clerk
City of Solomon, Solomon, Kansas

Your municipal offices, too, can benefit from the many time- and money-saving features of a National System. Nationals pay for themselves quickly through savings, then continue to return you a regular extra yearly profit. National's world-wide service organization will protect this profit. Ask us about the National Maintenance Plan. (See the yellow pages of your phone book.)

*TRADE MARK REG. U. S. PAT. OFF.

*National**

ADDING MACHINES
CASH REGISTERS • ACCOUNTING MACHINES
ELECTRONIC DATA PROCESSING
NCR PAPER (NO CARBON REQUIRED)

THE NATIONAL CASH REGISTER COMPANY, Dayton 9, Ohio
1039 OFFICES IN 121 COUNTRIES • 77 YEARS OF HELPING BUSINESS SAVE MONEY

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

June 4-9, Detroit, Mich.

AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Cobo Hall). Exec. Sec., Raymond J. Faust, 2 Park Avenue, New York 16, N. Y.

June 11-14—Honey Harbour Bay, Ont., Can.

ONTARIO WATER RESOURCES COMMISSION. Annual Meeting (Delawana Inn). Sec., D. S. Caverly, Dir., Div. of Plant Operations, E. Block Parliament Bldgs., Toronto, Ont., Can.

June 11-14—Washington, D. C.

UNITED STATES CONFERENCE OF MAYORS. Annual Meeting (Statler Hilton Hotel). Exec. Dir., Harry R. Betters, 1707 H St., N. W., Washington 6, D. C.

June 11-15—New York, N. Y.

AIR POLLUTION CONTROL ASSOC. Annual Meeting (Hotel Commodore). Exec. Sec., A. Arch, 4400 Fifth Ave., Pittsburgh 13, Pennsylvania.

June 12-13—Rochester, N. Y.

NEW YORK WATER POLLUTION CONTROL ASSOC. Semi-Annual Meeting (Hotel Manger). Exec. Sec., R. C. Sweeney, State Dept. of Health, 55 Church St., White Plains, N. Y.

June 12-13—Ocean City, Md.

MARYLAND MUNICIPAL LEAGUE. Annual Conference (Commander Hotel). Exec. Sec., A. Beals, Box 276, College Park, Md.

June 12-14—Albany, N. Y.

NEW YORK LOCAL GOVERNMENT WORKSHOP. Annual Meeting (Brubacher Hall-State Univ. College of Educ.). Ch., Frank C. Moore, Local Govt. Advisory Board, 155 Washington Ave., Albany 10, N. Y.

June 14-16—St. Paul, Minn.

LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Meeting (Hotel Lowry). Exec. Sec., Orville C. Peterson, 15 University Library Bldg., Minneapolis 14, Minn.

June 14-16—Cleveland, Ohio

OHIO WATER POLLUTION CONTROL CONFERENCE. Annual Meeting (Statler Hilton). Sec.-Treas., E. B. Ransom, 101 N. High St., Columbus 15, Ohio.

June 15-17—McCall, Idaho

IDAHO MUNICIPAL LEAGUE. Annual Meeting (Shore Lodge). Exec. Dir., R. W. Smith, 348 State St., Weiser, Idaho.

June 15-17—Wilmington, Del.

EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Hotel Du Pont). Sec., Edwin J. Clark, Box 328, Wayne, Pa.

June 15-20—Washington, D. C.

INTERNATIONAL UNION OF LOCAL AUTHORITIES, sponsored by the U. S. Conference of Mayors, the American Municipal Assoc., and the International City Managers' Assoc. Annual Meeting. Exec. Dir., Schuyler Lower, Washington Secretariat, World Conference of Local Governments, Room 526, District Building, Washington 4, D. C.

June 17-22—Denver, Colo.

THE ASPHALT INSTITUTE. Annual Meeting (Denver-Hilton Hotel). Ch. Engr. & Sec., Arvin S. Wellborn, Hqs. Asphalt Institute, College Park, Md.

June 18-20—Kiamesha Lake, N. Y.

NEW YORK CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Concord Hotel). Exec. Dir., Addison Mallery, 6 Elk St., Albany, N. Y.

June 18-21—Denver, Colo.

NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting (Brown Palace Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

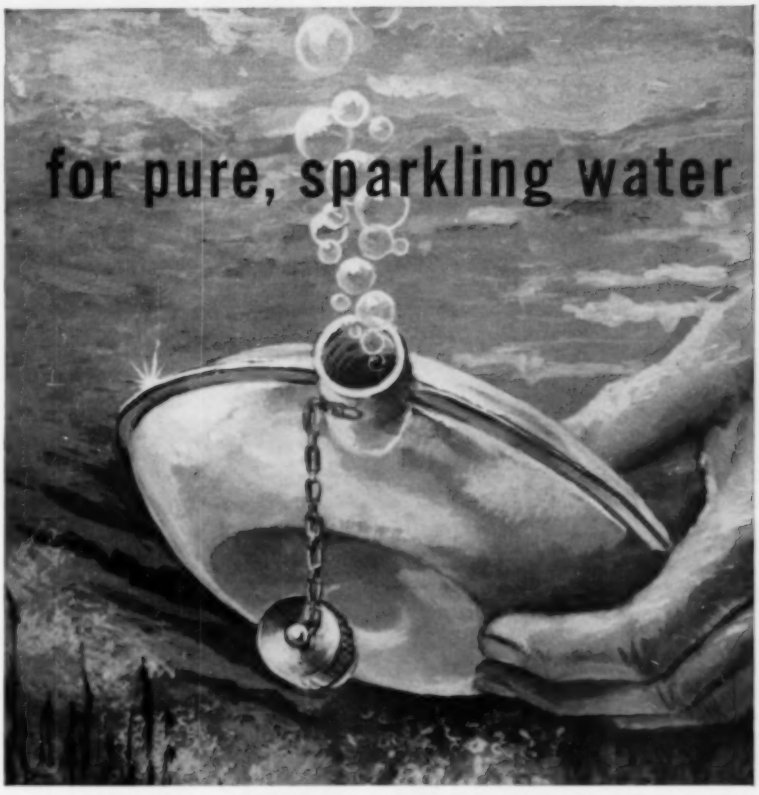
June 18-21—Philadelphia, Pa.

PENNSYLVANIA STATE ASSOC. OF BOROUGHS. Annual Meeting (Sheraton Hotel). Exec. Dir., Charles F. LeeDecker, 2415 N. Front St., Harrisburg, Pa.

June 20-22—Wernersville, Pa.

AMERICAN WATER WORKS ASSOC.—PENNSYLVANIA SECTION. Annual Meeting (Galen Hall). Sec.-Treas., L. S. Morgan, 59 Meadow Lane, Doylestown, Pa.

(Continued on page 227)



TRIANGLE BRAND COPPER SULFATE

Small, economical dosages of Triangle Brand Copper Sulfate will make your water supply palatable. It destroys algae and aquatic weeds that cause bad water odors and give water an unsavory taste. ■ Another important use of Triangle Brand Copper Sulfate is for the control of root growths, fungi and slime in sanitary sewers and storm drains without damaging trees and shrubs. ■ Write today for complete information on the use of Triangle Brand Copper Sulfate in water supply systems, sewers and drains.

phelps dodge refining corporation

300 PARK AVENUE • NEW YORK 22, NEW YORK

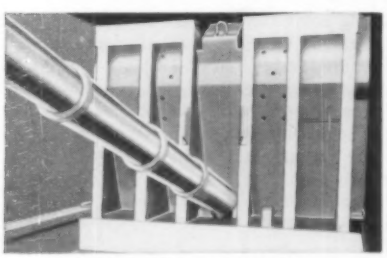
Hydro E-Z Packs help win 3 new municipal contracts

ADAM SCHLEINING,
President, Santa Ana
Commercial Co., Inc.

"We're saving at least $13,760 monthly with 32 Hydro E-Z Packs"—

In Santa Ana, Calif., Adam Schleining, President, Santa Ana Commercial Co., Inc., reports, "Our fleet of 32 Hydro E-Z Packs is saving us at least $13,760 monthly compared with the costs of operating open trucks. We are handling about 10% greater volume with half the number of trucks and men, even though our former equipment was self-packing." Mr. Schleining figures that E-Z Packs save two 40-minute dump trips daily per unit. And since one man with one E-Z Pack averages 375 pickups daily, efficiency is up 110% over trucks with 3-man crews.

"With this efficiency, we have won 3 new municipal contracts in 2 years on low competitive bids," Mr. Schleining said. For the full story see your Hydro E-Z Pack distributor or write us for a free copy of "The Big Squeeze."



76,600 lb. maximum pressure is applied by telescopic cylinder. E-Z Pack is world's most powerful refuse compactor.

One-piece door with strong box section framing absorbs compaction force, keeps its shape. Body stays watertight.

No hoisting! No chains or weights needed to hold down front end. The same blade that compacts refuse discharges fully packed load.

Hydro E-Z PACK

HYDRO E-Z PACK®

HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO

© 1960 HOWARD SWINK

Conventions—When and Where

(Continued from page 225)

***June 21-23—Poughkeepsie, N. Y.**

NEW YORK CITIZENS' COUNCIL'S INSTITUTE OF COMMUNITY LEADERSHIP. Annual Meeting. (Vassar College). Exec. V. Pres., Thos. L. Cotton, 122 E. 42nd St., New York 17, N. Y.

***June 21-24—Bedford Springs, Pa.**

PENNSYLVANIA STATE ASSOC. OF TOWNSHIP COMMISSIONERS. Annual Meeting (Bedford Spring Hotel). Sec.-Treas., Henry C. Lamparski, 1327 Pacific Ave., Natrona Heights, Pa.

***June 25-28—Honey Harbour, Ont., Can.**

INDUSTRIAL WASTE CONFERENCE, ONTARIO WATER RESOURCES COMMISSION. Annual Meeting (Delawana Inn). Sec., D. S. Caverly, 801 Bay St., Toronto, Ont., Can.

June 25-30—Atlantic City, N. J.

AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting (Chalfonte-Haddon Hall Hotel). Acting Exec. Sec., R. E. Hess, 1916 Race St., Philadelphia 3, Pa.

July 9-14—St. Louis, Mo.

NATIONAL ASSOCIATION OF SANITARIANS. Annual Meeting (Chase-Park Plaza Hotel). Exec. Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

July 10-12—Boulder, Colo.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Annual Meeting (Harvest House). Gen. Chair., Sam L. Huddleston, 2395 S. Josephine St., Denver 10, Colo.

***Aug. 9-11—University Park, Pa.**

PENNSYLVANIA WATER POLLUTION CONTROL ASSOCIATION. Annual Meeting (Pennsylvania State University). Sec.-Treas., J. R. Harvey, 996 S. Main St., Meadville, Pa.

***Aug. 13-16—Chicago, Ill.**

NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Palmer House). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave., Washington, D. C.

***Aug. 16-19—Cincinnati, Ohio**

NATIONAL MUNICIPAL CEMETERY CONFERENCE OF U. S. AND CANADA. Annual Meeting (Netherland-Hilton Hotel). Chairman, Vernon J. Birkhimer, 4809 W. Franklin St., Richmond 26, Va.

***Aug. 20-25—Minneapolis, Minn.**

NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Leamington Hotel). Exec. Sec., L. C. Chadwick, 1827 Neil Ave., Columbus 10, Ohio.

***Aug. 21-24—Washington, D. C.**

INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Sheraton Park Hotel). Exec. Sec., David M. Baldwin, 2029 K. St., N. W., Washington 6, D. C.

***Aug. 26-30—Seattle, Wash.**

AMERICAN MUNICIPAL ASSOCIATION. Annual Meeting (Olympia Hotel). Exec. Dir., Patrick Healy, Jr., 1612 K St., N. W., Washington 6, D. C.

***Sept. 2-9—Santiago de Compostela, Spain**

INTERNATIONAL FEDERATION FOR HOUSING AND PLANNING. Annual Meeting (Hostal de los Reyes Catolicos). Sec. Gen., L. B. Gelpke, 2 Alexanderstraat, The Hague, Netherlands.

***Sept. 4-8—Seattle, Wash**

NATIONAL TAX ASSOCIATION. Annual Meeting (Olympic Hotel). Exec. Dir., Walter J. Kress, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

***Sept. 11-16—Lisbon, Portugal**

INTERNATIONAL INSTITUTE OF ADMINISTRATIVE SCIENCES ROUNDTABLE. Annual Meeting (Lisbon Hotel). Dir. Gen., Paul A. Shillings, 25 Rue de la Charite, Brussels, Belgium.

Sept. 24-27—Minneapolis, Minn.

AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting (Municipal Auditorium). Exec. Dir., Robert D. Bugher, 1313 East 60th Street, Chicago 37, Ill.

***Sept. 24-28—Rochester, N. Y.**

AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Meeting (Manger Hotel & War Memorial Bldg.). Exec. Sec., Alfred B. La Gasse, Oglebay Park, Wheeling, W. Va.

Sept. 24-28—Poland Spring, Me.

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Poland Spring House). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

***Sept. 24-29—St. Louis, Mo.**

ILLUMINATING ENGINEERING SOCIETY. Annual Meeting (Chase Park Plaza Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

***Sept. 25-28—Las Vegas, Nev.**

INTERNATIONAL ASSOC. OF FIRE CHIEFS. Annual Meeting (Hotel Sahara). Exec. Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

***Sept. 30-Oct. 5—Montreal, Canada**

INTERNATIONAL ASSOC. OF CHIEFS OF POLICE. Annual Meeting (Hotel Queen Elizabeth). Exec. Dir., Leroy E. Wike, 616 Mills Bldg., 17th & Pennsylvania Ave., N.W., Washington 6, D. C.

***Oct. 1-5—Denver, Colo.**

PUBLIC PERSONNEL ASSOCIATION. Annual (International) Meeting (Denver Hilton Hotel). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 1-6—Detroit, Mich.**

NATIONAL RECREATION CONGRESS. Annual Meeting (Cobo Hall). Sec., Charles E. Hartsoe, 8 West 8th St., New York 11, N. Y.

***Oct. 8-11—Montreal, Que., Canada**

INTERNATIONAL ASSOC. OF ASSESSING OFFICERS. Annual Meeting (Queen Elizabeth Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 8-11—New York, N. Y.

NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference (Hotel Commodore). Exec. Vice-Pres., Albert H. Hall, 1001 Connecticut Ave., N. W., Washington 6, D. C.

***Oct. 9-11—Cincinnati, Ohio**

INTERNATIONAL MUNICIPAL SIGNAL ASSOC. Annual Meeting (Hotel Netherland-Hilton). Conference Mgr., Irwin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 9-12—Milwaukee, Wisc.

WATER POLLUTION CONTROL FEDERATION. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

(Continued on page 229)

ALL NEW!
FULLY TRANSISTORIZED
Detectron
PIPE DETECTOR

In addition to the famous model "505" Detectron now offers its completely new model "808" with the first circuitry developed specifically for use with transistors. It is NOT merely an adaptation of earlier tube circuits.

Efficient under every known operating condition, effective in varying temperatures, thoroughly proven and trustworthy. Superior performance and reliability guaranteed.

EXCLUSIVE FEATURES

- Detects Deeper by all comparisons
- Automatic Switching for direct connection
- High Energy-Transfer-Ratio
- Printed Circuits, properly shielded
- Separate Oscillator System
- Highly Perfected Loop Antennas
- Economical Standard Long-Life Batteries
- Built-In Battery Testers
- Snap-Lok Connecting Handle
- Aluminum Cases for maximum protection

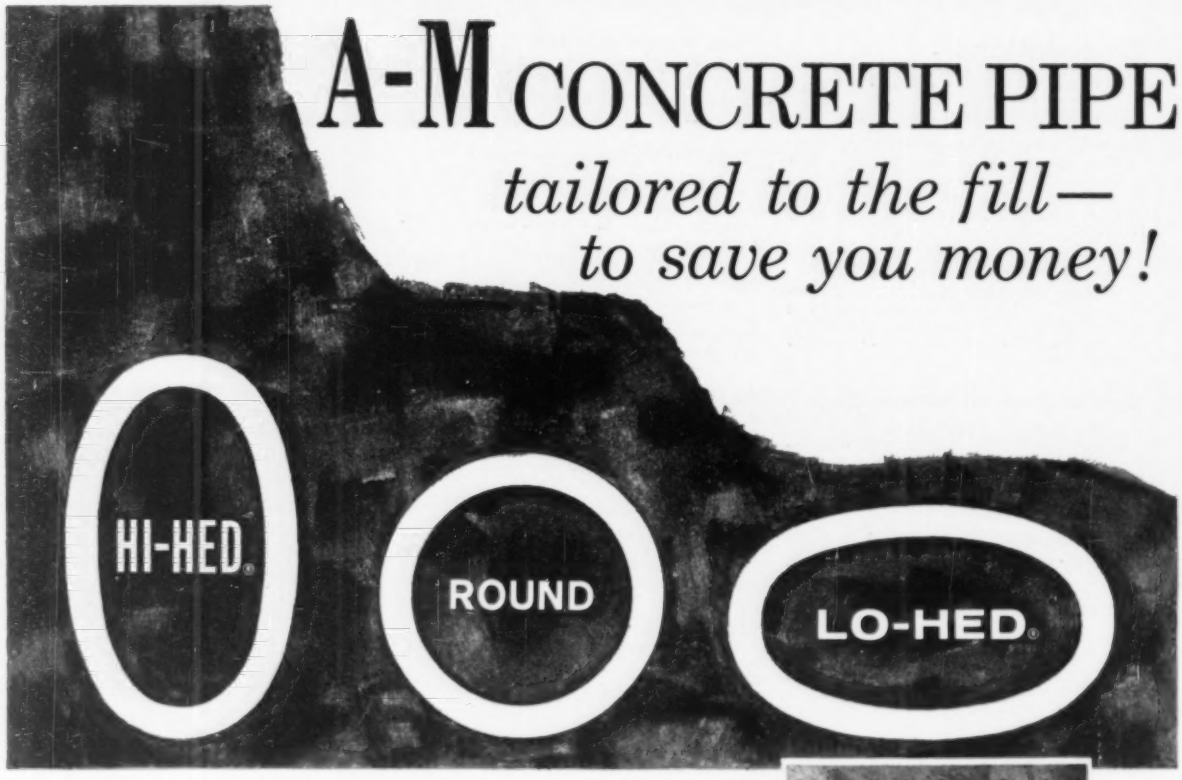
Written Lifetime Guarantee on CMC parts and workmanship

For specifications and prices, write for File No. AC-148

COMPUTER-MEASUREMENTS CO.
Utilities Instruments Div.
12970 BRADLEY, SYLMAR, CALIF.

A-M CONCRETE PIPE

tailored to the fill—
to save you money!



FOR HIGHEST FILLS AND HEAVY LOADS, Hi-Hed® is the *most economical* permanent sewer and culvert pipe because it is designed for minimum vertical load and maximum lateral support.

FOR AVERAGE FILLS, round concrete pipe is the *most economical* permanent conduit and American-Marietta saves added dollars through nationwide technical and manufacturing services.

FOR LOW FILLS, Lo-Hed® is the *most economical* permanent pipe because it offers maximum capacity under minimum cover and has inherent strength for greater resistance to impact.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Conventions—When and Where

(Continued from page 227)

***Oct. 9-13—Denver, Colo.**

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Meeting (Denver-Hilton Hotel). Exec. Sec., A. E. Johnson, 917 National Press Bldg., Washington 4, D. C.

***Oct. 16-19—Dallas, Texas**

AMERICAN TRANSIT ASSOCIATION. Annual Meeting (Adolphus and Baker Hotels). Gen. Sec., A. W. Baker, 355 Lexington Ave., New York 17, N. Y.

***Oct. 16-20—New York, N. Y.**

AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William H. Wisely, 33 West 39th St., New York 18, N. Y.

***Oct. 16-20—Chicago, Ill.**

NATIONAL SAFETY CONGRESS. Annual Meeting (Conrad Hilton Hotel). Sec.-Treas., R. L. Forney, 425 N. Michigan Ave., Chicago 11, Ill.

***Oct. 17-20—Los Angeles, Calif.**

UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Ambassador Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Ga.

***Oct. 25-27—Sacramento, Calif.**

AMERICAN WATER WORKS ASSOC.—CALIFORNIA SECTION. Annual Meeting (Senator Hotel). Sec.-Treas., Frank F. Watters, California Public Utilities Com., State Bldg., Civic Center, San Francisco 2, Calif.

***Oct. 29—Nov. 1—Washington, D. C.**

NATIONAL ASSOC. OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Conference (Hotel Sheraton-Park). Exec. Dir., John D. Lange, 1313 E. 60th St., Chicago 37, Ill.

***Nov. 12-17—London, England**

PUBLIC WORKS & MUNICIPAL SERVICES CONGRESS. Annual Meeting (Olympia Hotel). Write: The Municipal Agency, Ltd., 3/4, Clements' Inn, London, W. C. 2, England.

***Nov. 13-17—Detroit, Mich.**

AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Meeting (Cobo Hall). Exec. Dir., Berwyn F. Mattison, M. D., 1790 Broadway, New York 19, N. Y.

***Nov. 26-30—Detroit, Mich.**

AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., W. C. Dutton, Jr., Suite 410, 2400 16th St., N. W., Washington 9, D. C.

Nov. 26-30—Miami Beach, Fla.

INTERNATIONAL CITY MANAGERS' ASSOC. Annual Meeting (Fontainebleau Hotel). Exec. Dir., Orin F. Nolting, 1313 E. 60th Street, Chicago 37, Ill.

Six Suburbs Form Cooperating Group

Six municipalities of lower Bucks County (metropolitan Philadelphia) currently meet regularly to work out joint or cooperative solutions to their problems. This regional cooperation committee began in 1957 to discuss joint action in dealing with defects in road, curb and sidewalk construction in the municipalities having parts of the Levittown development. These were Bristol, Falls and Middletown Townships and Tullytown Borough. Lower Makefield Township and Morrisville Borough have since joined, and Lower Southampton Township and Bristol Borough have also evidenced some interest.

This regional committee has tackled problems that run almost the full range of municipal services. For example, they have already or will shortly have:

- **Agreed to divide boundary streets into sections for maintenance purposes**
- **Made full-scale study of refuse-collection and disposal practices to determine whether and how to make improvements.**
- **Arranged contracts for joint animal-control services**
- **Organized a special training course for supervisory employees**
- **Initiated non-governmental community programs which are more appropriately conducted on a regional basis than by individual municipalities, e.g., Clean-up, Paint-up, Fix-Up Week, United Nations Week, and a Better Business Bureau**
- **Jointly purchased materials and supplies**
- **Standardized ordinances which regulate building, real estate operations, or soliciting**
- **Prepared a regional zoning map**
- **Jointly purchased a paving machine**
- **Participated in a study of regional public transportation**

The committee functions informally, it elects officers and keeps minutes of its regular monthly meeting. It consists of designated representatives from the respective governing bodies. Its decisions have the status of recommendations to various local governments organizations for their approval, rejection or modification. The committee itself carries out none of the programs since it has no operating authority or funds.

Other municipalities have undoubtedly cooperated in many of the projects related above without any formal organization. Furthermore, many other areas were investigated by the committee without definite action resulting from the discussion.

The Regional Cooperation Committee maintains an office address at P. O. Box 381, Levittown, Pa. ◄◄

NEW ADVANCED DESIGN ARROW

Side-Action Mobile Hydraulic Hammer

With the new ARROW you get these important advanced design features for faster, lower-cost tamping, breaking—and cutting:

- **Two new side-action models—G400 and D500**
- **Choice of gasoline or diesel engine**
- **Dash-mounted creeper drive controls**
- **Increased creeper power—infinitely variable speed control**
- **Totally enclosed creeper drive**
- **New, more powerful brakes**
- **New, heavier drive axle**
- **New, heavier steering axle and wider tire tread**
- **New, built-in oil cooler**
- **12 volt electrical system**
- **New safety devices give added protection to operator and machine**
- **New, improved, adjustable seat**
- **Superior maneuverability—shorter turning radius**
- **New throttle controls**

For complete information about the new ARROW Side-Action Hammer and its money-making features, WRITE TODAY!

ARROW MANUFACTURING COMPANY
194 W. Dakota Avenue,
Denver 9, Colorado

CAN YOU "GET ALONG" WITHOUT AUTOMATIC VOTING MACHINES?

Well, possibly you can . . . just as you "got along" 100 years ago without the automobiles, typewriters, adding machines, and telephones that enable you to operate so efficiently today . . .

BUT!

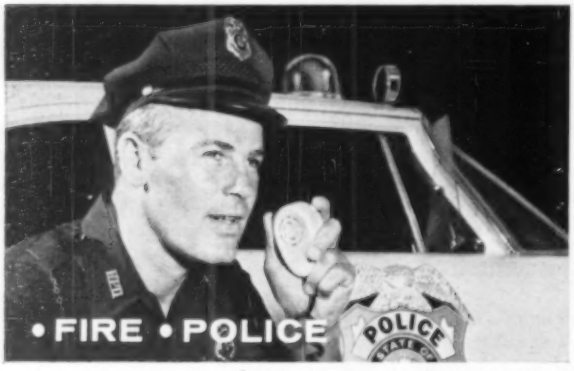
This Is Today . . . Not 100 Years Ago!

products for the public good

AUTOMATIC
VOTING MACHINE

division of **Rockwell Manufacturing Company**

Jamestown, N. Y.



Anyone can operate—license issued by FCC on request!

2-WAY RADIO
from $134.95

Ideal for small municipalities . . . puts 2-way radio within the reach of any budget! Complete Citizens' Radio (Class "D") transceiver—excellent range—highly sensitive and selective receiver. Built-in squelch, Automatic Volume Control, and Automatic Noise Limiter. 23 channel coverage—select 1 of any 5 channels with the flip of a switch. Easy to install anywhere. Complete with tubes, push-to-talk microphone and crystals for one channel.

SEND FOR FREE COLOR BROCHURE!

Please send full details on the "Messenger"

NAME_____

ADDRESS_____

CITY_____ STATE_____

VIKING *Messenger*

E. F. JOHNSON COMPANY

2101 Tenth Ave. S. W. • Waseca, Minn.

Manufacturers of the world's most widely used personal communications transmitters

---

TOSSITS KILL MOSQUITO LARVAE

20 Times FASTER

Save Time, Labor, Money

NO SPECIES IMMUNE

100% Kill in All Breeding Places. Swamps, Canals, Catch Basins, Rain Pools, Ditches

Just toss them into infested water, capsule dissolves in minutes, spreading a lethal film in all directions on the surface. One Tossit larvicides 100 to 750 feet of water.

Clean, Safe, Easy to Handle
50 Tossits larvicide an acre of breeding ground or 50 pools in minutes

Ideal for Hard to Reach Areas
One man with Tossits does the work of five with hand equipment

Write today for prices and literature

WYCO INTERNATIONAL

Sole Distributor for Wyco Inc.

4811 Carnegie Avenue **Cleveland 3, Ohio**

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Local Government Boundaries

LOCAL GOVERNMENTAL BOUNDARIES AND AREAS: NEW POLICIES FOR CALIFORNIA—*By Stanley Scott, Lewis Keller, and John C. Bollens. Bureau of Public Administration, University of California, Berkeley, Calif.* 1961. 77pp. $2.

The Governor's Commission on Metropolitan Area Problems concludes that California needs:

- statutory standards to guide municipal incorporation and annexation.
- a state agency to administer these standards.
- authority given to this state agency to approve or prohibit creation of new special-purpose districts in metropolitan areas, other than school or multi-county districts.
- authority also given to this agency to consolidate or eliminate "unnecessary" special districts.

The text tells what is involved and lists local boundary and area policies in five states, and in England, New Zealand, and Ontario, Canada.

Road School Report

PROCEEDINGS OF THE 46TH ANNUAL ROAD SCHOOL HELD AT PURDUE UNIVERSITY. *Compiled and edited by J. F. McLaughlin, Associate Professor of Civil Engineering. Engineering Extension Series, No. 105, Purdue University, Lafayette, Ind.* 269pp.

A compilation of papers presented at the 1960 Road School, covering all phases of street and highway planning, construction and maintenance. Traffic engineering and planning, specifications and surveying methods are also included. The report consists of 25 papers presented during the four-day session.

Water and Sewerage Text

WATER SUPPLY AND WASTE DISPOSAL—*By W. A. Hardenbergh and Edward R. Rodie. International Text Book Co., Scranton 15, Pa.* 1961. 503pp. $11.

A single-volume presentation of the theory and practices concerned with the basic problems of water supply and waste disposal. The authors, recognizing the importance of an ever-increasing relationship between the basic problems of these areas of sanitary engineering work, have, insofar as possible, provided an integrated treatment of the fundamental principles and practices common to both water supply and waste disposal. They have also given detailed consideration to both the design and operation of water-supply systems and waste-disposal systems. The work includes new viewpoints and concepts based on our growing population, rapid suburban development and the steady increasing per capita rate of water use.

Residential Areas

NEW APPROACHES TO RESIDENTIAL LAND DEVELOPMENT—*A Study of Concepts and Innovations. Urban Land Institute,* 1200 18*th St., N. W., Washington 6, D. C.* 1961. 151pp. $6.

Probably as stimulating a text on what is happening in residential layouts as one can find easily. Its introductory example of both a planned and unplanned area gives one the worried feeling that all too many communities haven't been as fortunate as Sherbrooke.

The "cluster" type development with its ample arrangements for open space, the "town house" type of row-house development, and many other stimulating new ideas that have proved themselves will provide constructive aid to any growing urban area. The loop streets in the 160-acre neighborhood of Midwest City, Okla., for example, have not had a fatal accident in the 20 years of their existence.

The text also has examples of resort-town trailer parks, neighborhoods with circular layouts, and interestingly, a strong case favoring sewer design with both vertical and horizontal curve alignment.

Planning

PLANNING AND THE URBAN COMMUNITY—*By Harvey S. Perloff. Carnegie Institute of Technology and University of Pittsburgh Press, Pittsburgh, Pa.* 1961. 235pp. $4.

A group of papers on city planning presented at a seminar held jointly by Carnegie Institute of Technology and the University of Pittsburgh. The editors have divided the book conveniently into three

(Continued on page 233)

NEW BULLETINS ON TREATMENT OF WATER, SEWAGE & INDUSTRIAL WASTE

AERATORS | FILTER PLANTS | CLARIFIERS | ZEOLITE SOFTENERS

AERATORS—Describes aerators for oxidation of dissolved iron and manganese, and for elimination of odors and gases. Explains and pictures forced draft aerators, pressure aerators and atmospheric aerators.

FILTER PLANTS—Lists problems of untreated water and offers solutions. Explains and pictures four basic water treatment methods for elimination of turbidity, minerals, gases, organic matter, and for pH correction.

CONTRAFLO UPFLOW CLARIFIERS—Pictures and describes five basic contraflo types for water softening and clarification. Explains application for industrial waste neutralization and recovery processes.

"CR" ZEOLITE SOFTENERS—Illustrates design and construction details of ion-exchange softeners for hardness removal; tells how to select proper units. Explains various types of regeneration equipment.

GENERAL FILTER co.

WATER PROCESS EQUIPMENT — BOX 350, AMES, IOWA

A1

GENERAL FILTER CO.
P.O. Box 350, Ames, Iowa

Please send free bulletins on items checked.

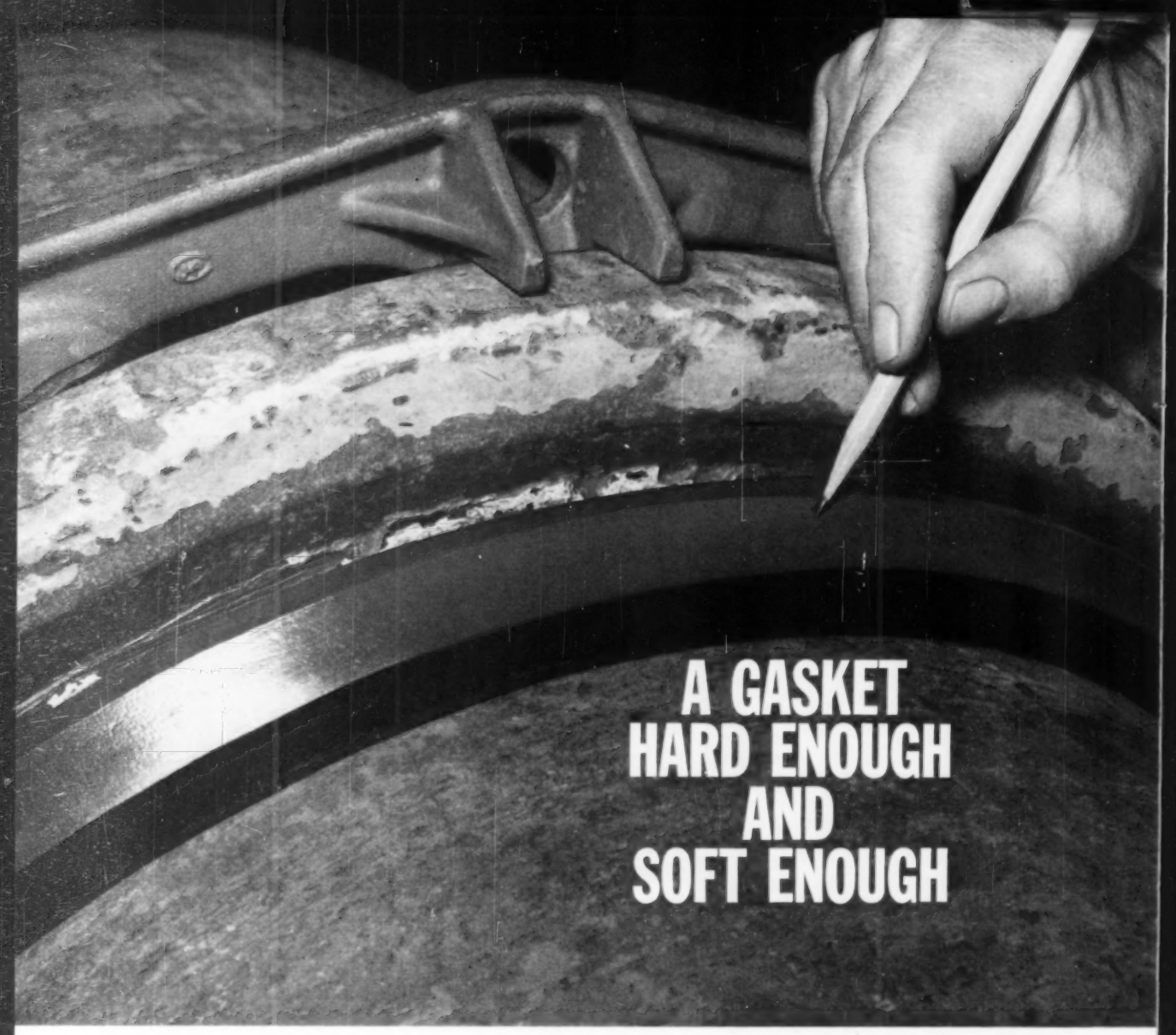
Your name _____

Associated with _____

Street address _____

City _____ State _____

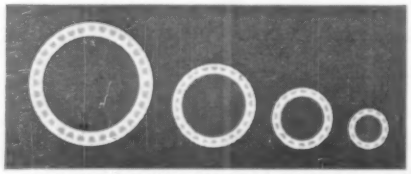
☐ Aerators
☐ Filter Plants
☐ Contraflow Upflow Clarifiers
☐ "CR" Zeolite Softeners
☐ Have representative call



A GASKET HARD ENOUGH AND SOFT ENOUGH

The real secret to stopping leaks with CIP Bell-Joint Clamps

Style 60's complete adjustability fits both standard and pre-standard pipe perfectly. Your Dresser Distributor can also recommend methods of using Style 60 components on odd combinations of pipe.



In all sizes, from 3" to 60", gasket sealing surfaces are at least twice the caulking space to allow for deflected and off-center joints.

Uniform gasket pressure, all around the bell face, is the key to successfully clamping bell joints. The rough face of the caulking is impossible to pack properly with a hard gasket. Yet, a soft gasket tends to flow and lose bolt torque in a matter of days. Only Dresser® Style 60 Bell Joint Clamps have specially compounded gaskets to give "just right" hardness...low permanent set...and aging resistance. ■ Your Dresser Distributor is anxious to give you the full story on the Style 60 as well as Dresser's complete line of pipe coupling and repair products. Call him today. Or write Dresser Manufacturing Division, 65 Fisher Avenue, Bradford, Pennsylvania.

dmd

DRESSER

MANUFACTURING DIVISION
BRADFORD, PENNSYLVANIA

DRESSER INDUSTRIES, INC.

OIL ■ GAS
CHEMICAL
ELECTRONIC
INDUSTRIAL

(Continued from page 231)

parts. The first, "Understanding the Urban Community," tries to analyze the economics, cultural and social characteristics. The second, "Metropolitan Politics and Organization for Planning," tries to provide guidance on where the planner should fit in urban government. The third, "The Nature of Planning and Planning Education," analyzes city planning as a social movement, a governmental function and a technical profession. It tries to unfold facets in urban design, and show the relation between planning and decision making.

Industry

INDUSTRIAL SITES: A COMMUNITY PROBLEM —*By Charles M. Stephenson. Bureau of Public Administration, University of Tennessee, Knoxville, Tenn.* 1961. 18*pp.*

An economist on the government-relations and economics staff of the TVA briefly describes the experience of ten different communities in providing land for industrial development.

Swim Pool Law

LEGAL PROBLEMS AFFECTING PRIVATE SWIMMING POOLS—*By F. Reed Dickerson. Hoffman & Harris, Inc., 425 Park Ave. South, New York, N. Y.* 1961. 126*pp.* $7.50.

Legal regulations affecting residential swimming pools, covering both the owner's responsibilities and those of the regulatory body, come under scrutiny by a professor of law.

The book is a direct outgrowth of action taken in 1958 by Bloomington, Ind., to adopt new legislation controlling the growing number of family pools.

Land Development

COMMUNITY BUILDERS HANDBOOK — *Urban Land Institute,* 1200 18*th St., N. W. Washington* 6, *D. C.* 1960. 476*pp.* $15.

A text designed for housing subdividers instead of city planners or administrators. Nevertheless it has lots of good information for the latter. It is hard to imagine a detail about land development that the authors have overlooked. Distinctive in this edition is a comprehensive section devoted to shopping centers, although the subject matter elsewhere in the book ranges from airports to marinas, trailer parks and zoning.

Consultants

THE CONSULTING ENGINEER — *C. Maxwell Stanley. John Wiley and Sons, Inc.,* 440 *Park Ave. South, New York* 16, *N. Y.* 258*pp.* $5.95.

One of the foremost consulting engineers of our time describes a consultant's professional relationships to his client, to other consultants and to the public. Part II deals with the internal problems of a consulting business. The keynote is operation. Not a technical how-to-do-it book.

Freeways

FREEWAY OPERATIONS—*Institute of Traffic Engineers,* 2029 *K St., N. W., Washington, D. C.* 1961. 88*pp. Paperbound.* $1.

A report on the 12 seminars conducted in 1958 and 1959 by the Institute of Traffic Engineers in various parts of the country on the subject of freeway operations. Since many of these will pass through urban areas and will have direct effects on them, the city administrator will find his share of interest in the report. The section on driver characteristics is interesting. The section of design elements probably will be the most useful.

The publication contains many recommendations growing out of the discussions at the seminars. On controversial points it attempts to present both sides of the argument. The book is well illustrated and documented wherever possible with the most recent data.

Land-Use Surveys

LAND USE HANDBOOK: A GUIDE TO UNDERTAKING LAND USE SURVEYS—*Northeastern Illinois Metropolitan Area Planning Commission,* 72 *West Adams St., Chicago* 3, *Ill.* 1961. 33*pp. Paperbound.* $2.50.

This manual provides a standardized system that authors feel will permit nonprofessionals to conduct a land-use survey and prepare a land-use map. It was prepared specifically for the Northeastern Illinois Metropolitan Area's 160 municipal planning commissions and its many thousands of citizen leaders and county, township and municipal officials.

The handbook employs a three-scale system; it may be used in conducting surveys and preparing maps at a community scale, a county scale, and a metropolitan-area scale. It has nine basic land-use categories.

Municipal Water Supply Data

MUNICIPAL WATER FACILITIES, COMMUNITIES OF 25,000 POPULATION AND OVER, UNITED STATES AND POSSESSIONS, AS OF JANUARY 1, 1960—*U. S. Department of Health, Education, and Welfare, Public Health Service, Bureau of State Services, Division of Water Supply and Pollution Control, Washington* 25, *D. C. Publication No.* 661. 91*pp.*

An inventory showing the organized community water facilities for approximately 850 municipalities, with data reflecting changes which have occurred since the last issue dated January 1, 1958. The book provides up-to-date information such as population served, ownership, source of supply, number of services and/or meters, storage and treatment data, type of plant, various capacities and other related data. One column in the listing indicates improvements currently needed to provide adequate service.

Government Finance

FACTS AND FIGURES ON GOVERNMENT FINANCE, *Eleventh Edition—Tax Foundation, Inc., 30 Rockefeller Plaza, New York* 20, *N. Y.* 1961. 275*pp.* $3.50.

An invaluable tool for city officials as well as for all who are interested in the financial aspects of government has been compiled in this volume. It is a source book of information about tax rates, revenues, expenditures and debt at the federal, state and local levels.

ADMINISTRATION AND GOVERNMENT

TEXAS—Personnel Practices in Selected Municipalities. Texas Municipal League, 402 Vaughn Bldg., Austin 1, Texas. 1961. 108pp. $7.50.

AIRPORTS

GENERAL—Selection of Pavement Types for Civil Airfields. By Charles R. Foster and H. K. Griffith. National Bituminous Concrete Association, 1145 19th St., N.W., Washington 6, D. C. 1960. 125pp.

(Continued on page 235)

CLOSE MESH
IRVICO Gratings are made in an exceptionally close mesh with bearing bars spaced ¼" face to face.
WIDE MESH
IRVICO Gratings are also made in an unusually large mesh with bearing bars spaced as much as 6" face to face.

New frontiers in grating design

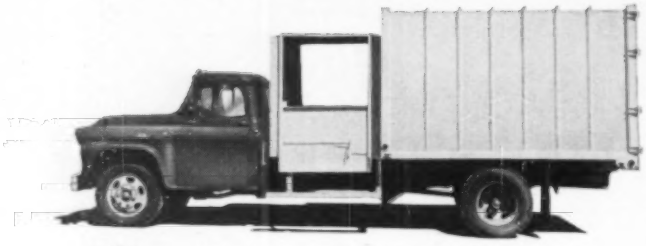
The many new uses for grating that have been developed and are being explored require an increasing number of mesh designs and sizes. IRVICO now produces 147 different mesh designs for an enormous variety of industrial, architectural and decorative applications...with more to come for new uses and conditions.

"A FITTING GRATING FOR EVERY PURPOSE"
Catalog on request

IRVICO®

IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902
Offices and Plants at:
5030 27th St., Long Island City 1, N. Y.
1830 10th St., Oakland 20, California

Two Low-Cost Ways to Get a Cleaner Community



RAM-PAK BAUGHMAN REFUSE TRUCK

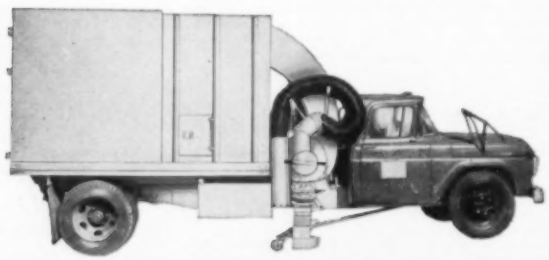
The self-packing, self-unloading refuse body with many exclusive features:

Ram-Pak Refuse Truck has self-packing feature that permits more rubbish collecting before dumping is necessary. Load from both sides, has large crew ramps. Water tight body. Dumps automatically with powerful twin ram hoists. Two body sizes. Write for Leaf-Vac Bulletin A-457 . . . Ram-Pak Bulletin A-433-A.

LEAF-VAC BAUGHMAN LEAF SWEEPER

The modern vacuum-action method for cleaning leaves from streets and gutters.

Leaf-Vac Leaf Sweeper does efficient leaf and twig collecting through powerful vacuum suction, has auxiliary engine to power blower. A 12-foot hose attachment cleans catchbasins and the curb-to-sidewalk area. Collects full 5-foot swath without raising dust; vapor spray keeps dust down while loading and unloading. Dumps automatically. Three body sizes.



Better service through better engineering. Parts and service from 200 distributors

BAUGHMAN MANUFACTURING COMPANY, INC.

TRANSPORTS · SPREADERS · CONVEYORS

307 SHIPMAN ROAD • JERSEYVILLE, ILLINOIS

6059

16,410

SCHOOLS, PARKS USE BUCKNER SPRINKLER SYSTEMS

Buckner sprinklers are providing better looking, easier to maintain turf for schools, sports fields, parks, building areas and golf courses all over the world. Keep your grounds and gardens Buckner beautiful with a low-cost Buckner sprinkler system.

Give turf that championship look. Install genuine Buckner sprinklers, your key to successful irrigation. See your local Buckner dealer for free estimates and preliminary irrigation plans.

Buckner, the pioneer manufacturer of golf course irrigation equipment, has distributors in all principal cities. Look in the yellow pages under "Sprinklers."

BUCKNER SPRINKLERS

MANUFACTURING CO., INC.
P. O. Box 232, Fresno 8, California
WORLD WIDE DISTRIBUTION

No other filtering medium compares with

ANTHRAFILT

Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is best for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

(Continued from page 233)

AIR POLLUTION

GENERAL—A Digest of State Air Pollution Laws. U. S. Department of Health, Education and Welfare, Public Health Service Division of Air Pollution, Washington 25, D. C. 1960. 126pp.

CIVIL DEFENSE

GENERAL—Family Fallout Shelters of Wood Office of Civil and Defense Mobilization, Washington 25, D. C. 1960. 11pp.

FINANCE AND TAXATION

MICHIGAN — Michigan Municipal Wages, Salaries and Fringe Benefits. Michigan Municipal League, 205 South State St., Ann Arbor, Mich. 1961. 124pp. $4.

PENNSYLVANIA—Pennsylvania Local Government Taxes Levied Under Act 481 in 1958. Commonwealth of Pennsylvania Department of Internal Affairs. Harrisburg, Pa. 1961. 85pp.

VIRGINIA—Salaries and Working Conditions of Policemen in Virginia Police Departments. Virginia Municipal League, 905 Travelers Bldg., Richmond 19, Va. 1961. 15pp. $1.

WISCONSIN—Special Assessments in Theory and Practice. Economic Research Agency, 114 North Carroll St., Madison 3, Wis. 1960. 84pp.

NOTEWORTHY ANNUAL REPORTS

COLUMBUS, OHIO—1960 Annual Report. Div. of Smoke Regulation & Inspection, Department of Public Safety, Columbus, Ohio. 33pp.

GREENVILLE, S. C.—Annual Report. City of Greenville, City Hall, Greenville, S. C. 1960. 8pp. Newspaper-supplement type.

PATCHOGUE, N. Y.—9th Annual Report. Village of Patchogue, P. O. Box 105, Patchogue, L. I., N. Y. 1960. 28pp.

PLANNING, ZONING AND HOUSING

CHICAGO, ILL.—Location Patterns of Major Manufacturing Industries in the City of Chicago: Economic Base Study #2. Department of City Planning, Research Div., City Hall, Chicago, Ill., 1960. 57pp.

GRAND JUNCTION, COLO.—City Zoning Ordinance. City Manager's Office, Grand Junction, Colo. 1960. 67pp. $3 (Price includes mailing of amendments for 1961-'62-'63).

PEEKSKILL, N. Y.—Academy Street Renewal Project. Raymond and May Associates, 42 Memorial Plaza, Pleasantville, N. Y. 1960. 10pp.

PHILADELPHIA, PA.—Partners for Good Housing: a guidebook for tenants, landlords and homeowners. Dept. of Licenses and Inspections, City Hall Annex, Philadelphia 7, Pa. 1961. 17pp.

SAINT PAUL, MINN.—Metropolitan Population Study, Part II. Numbers & Distribution. Twin Cities Metropolitan Planning Commission, Griggs-Midway Bldg., University of Fairview, Saint Paul 4, Minn. 1961. 53pp.

PUBLIC RELATIONS

SAN ANTONIO, TEX.—A Citizen's Guide to the City of San Antonio. Office of the City Clerk, City Hall, San Antonio, Tex. 1960. 28pp.

STREETS AND HIGHWAYS

GENERAL—Soil Stabilization by Admixing Portland Cement. Highway Research Board Bulletin 267. Highway Research Board, 2101 Constitution Ave., N. W. Washington, D. C. 1960. 50pp. $1.20.

WATER

GENERAL—Report of the Select Committee on National Water Resources. U. S. Government Printing Office, Washington 25, D. C. 1961. 147pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES

from April 4th to May 2nd, 1961

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
4/ 4/61	Largo Fla.	1,430	Water and Sewer, revenue	40	4.38	4.40
4/ 5/61	Pawtucket, R. I.	50	Sidewalk	5½	3.60	3.59
4/ 7/61	Huntington, W. Va.	575	Sewer Revenue Refunding & Improvement	4½	3.00	3.47
4/10/61	Shaker Heights, Ohio	1,000	Sewer and Drain	11	3.25	....
4/11/61	Cleveland, Ohio	2,000	Freeway Improvement (gen. obl.)	10½	....	3.15
4/11/61	East Hartford, Conn.	3,500	School, Public Works (gen. obl.)	10½	3.25	3.22
4/11/61	Erie, Pa.	1,500	Water Works Improvement (gen. obl.)	....	....	3.46
4/11/61	Lee Co. N. C.	293	Public Hospital	....	....	3.58
4/11/61	Los Angeles Cty., Calif., Flood Control Dist.	15,000	County Flood Contro	8⅝	3.75	3.59
4/11/61	Richmond, Ind., Sanitary Dist.	1,575	Sanitary Sewer	12	3.38	3.30
4/12/61	Chicago, Ill.	900	Refuse Disposal (gen. obl.)	8	3.25	3.37
4/13/61	Paterson, N. J.	1,854	Sewer & School (gen. obl.)	8½	3.30	....
4/13/61	Rockville Center, N. Y	1,208	Public Improvement	5	3.10	....
4/14/61	Cameron Cty., Texas	1,750	International Toll Bridge, revenue	16	4.75	....
4/20/61	Oklahoma City Okla., Airport Trust	8,700	Airport, revenue	26¾	4.13	4.24
4/24/61	Portsmouth, Ohio	500	Street and Highway	6½	3.00	....
4/25/61	North Hempstead N. Y	1,660	Drainage	15½	3.60	....
4/27/61	Minneapolis, Minn.	675	Storm Drain (gen obl.)	5	2.70	3.52
5/ 2/61	North Olmstead, Ohio	1,700	Sewer.	14¾	4.00	3.86
5/ 2/61	Raleigh, N. C.	83	Fire Equipment (gen. obl.)	....	6.00	3.13

Compiled from **THE WEEKLY BOND BUYER**

Re-new your structures with GUNITE!

★ durability

★ economy

★ flexibility

- DAMS
- RESERVOIRS
- TUNNELS
- GRAIN ELEVATORS
- BREAKWATERS
- CONCRETE TANKS
- FILTER PLANTS
- STADIUMS
- SEA WALLS
- PIPE LINES
- SEWERS
- STACKS
- BRIDGES

estimates, specifications and surveys made free of cost to you. write, wire or call MElrose 4-8120

INDIANA GUNITE & CONSTRUCTION CO., Inc.

ENGINEERING—CONSTRUCTION

CONTRACTS TAKEN ANYWHERE

1555 Helton Street
Florence, Alabama

1734 Villa Avenue
Indianapolis, Indiana

ON GUARD IN INDEPENDENCE SQUARE

About 75 feet away from Independence Hall, in the park to the south, stand R. D. Wood Hydrants like sentinels on duty. While their proximity to the Nation's most revered historic monument does not necessarily imply endorsement, we nevertheless like to think of them there, on guard night and day against the fire that could destroy what Gen. Howe saw fit to spare, and Clinton too, in the British occupation. But R. D. Wood Hydrants need no endorsement. For over a century they have shown themselves to be in constant readiness for any emergency. Of simple, ingenious design and rugged construction, R. D. Wood Hydrants are protected against ice and sediment—function smoothly when the engines arrive. There could be no better protection for any community than R. D. Wood Hydrants—and there could be no better protection for the birthplace of the U.S.A.

Conform to A.W.W.A. specifications

R. D. WOOD COMPANY

Established in 1803

Public Ledger Bldg.
Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

Expands Use of Traffic Line Striper

WALD INDUSTRIES, INC., HUNTINGDON, PA., has just marketed a new Tandem Tanker which enables conversion of the Model 16 Reflecto-Liner into a two-color operation to meet new federal two-color marking standards. It will also double the Model 16's paint capacity for a two-gun single color operation.

The tanker can also be attached to the Wald Model 12 to double its present 15-gallon capacity, and serves as a compact trailer with comfortable seat for the operator.

Pictured at the left is the Wald Model 16 Reflecto-Liner equipped with the new Tandem Tanker.

Mobile Drop Hammer

The Model DH-8 drop hammer has just been added to the line of earth-moving equipment produced by HENRY MFG. CO., BOX 521, TOPEKA, KANS. It may be used for breaking concrete, cutting asphalt or tamping backfill (special tools are available for these purposes), and is designed for mounting on various makes of utility tractors in combination with Henry loaders.

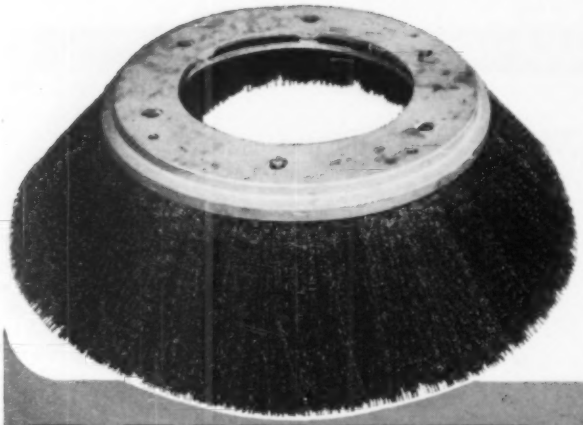
The 1,000-pound striker produces up to 8,000 foot pounds of impact. Striker and mast may be shifted hydraulically for total lateral movement of 5 feet. The DH-8 operates by hydraulic power and has an electronic control for automatic cycling. *Bulletin* D-8 gives full specifications.

Copies on the Double

This new, semi-automated Verifax copier reproduces two 8½-inch by 11-inch letters at the same time. Its 11-inch by 17-inch matrix also permits copying of maps, drawings, and other large documents. Four-page letter-size folders can be copied with only two exposures. For details, write BUSINESS PHOTO METHODS SALES DIVISION, EASTMAN KODAK CO., ROCHESTER 4, N. Y.

New Tractor Dozer Blade

A new high strength steel angle blade, especially valuable for finish grading, ditching construction and other utility dozing work, has been designed for use on Models 180 and 280 "Michigan" rubber tired Tractor Dozers. The blade may be angled 25° to right or left and has its own "C" frame for mounting to the tractor dozer. Maximum blade tilt is 8 inches. There is a size for each tractor dozer model. For specifications, write CONSTRUCTION MACHINERY DIVISION, CLARK EQUIPMENT CO., PIPESTONE PLANT, BENTON HARBOR, MICH.



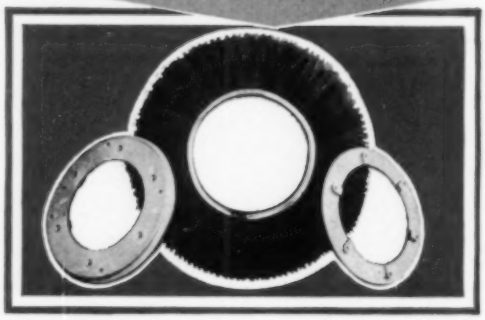
DO IN 10 MINUTES WHAT USED TO TAKE HOURS

USE...

DANLINE PREMADE GUTTER BROOMS!

59-33

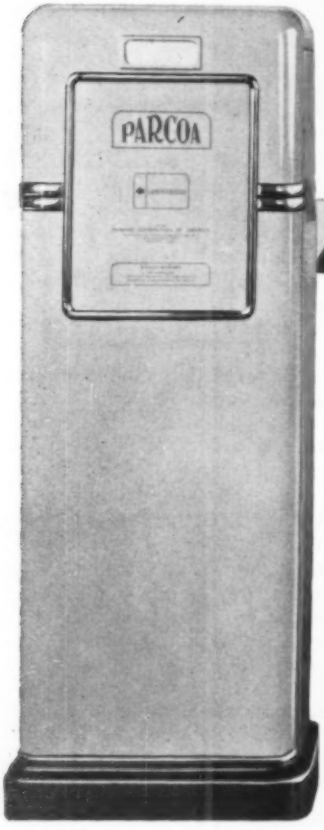
Only with Danline Premade Gutter Brooms can you strip and refill worn brush sections in minutes — *instead of hours!* Unique construction of Danline housing holds complete gutter broom in one premade section. Remove only 6 bolts, insert new section, fasten bolts — you're ready to resume sweeping. Factory fabrication insures proper balance of brush, eliminates shimmy. Easy! Simple! Economical! Write now for facts and illustrated literature.



Leadership Proved Through Performance!

NEWARK

NEWARK BRUSH COMPANY
260 MICHIGAN AVENUE
KENILWORTH, NEW JERSEY



DEPENDABLE PARCOA®

SOLVES PARKING PROBLEMS GIVES YOU CONTROLLED OFF-STREET PARKING

Every month, more and more cars are appearing on America's highways adding to congestion and confusion. Parcoa offers the perfect solution . . . positive parking control—day and night . . . smoothly, safely, without interruption or overcrowding. PARCOA is an automatically controlled completely integrated parking system—not just a gate. You are offered a choice of controls . . . coded card key, coin operation, ticket issuing system or a time-dated ticket dispenser.

PARCOA will pay for itself many times over. 100% collection and ease of maintenance are assured. Before deciding on **any** parking control system investigate **PARCOA!**

PARCOA®
Johnson SINCE 1909 Systems
PRODUCT OF BOWSER RESEARCH

JOHNSON FARE BOX COMPANY
Subsidiary of BOWSER, INC.,
4611 N. Ravenswood Ave. • Chicago 40, Ill. • LO 1-0217
DISTRICT FIELD OFFICES:
NEW YORK: 420 Lexington Ave., New York 17, N.Y.
ATLANTA: 741 Boulevard N.E., Atlanta 5, Georgia
CANADA: E. A. Horton Sales Ltd., 299 Bering Ave., Toronto 18, Ont.

Pontoons for Marina Use

Aluma-Float Pontoons are fashioned into a trim, strong, efficient dock, impervious to marine growth, gas or oil and completely maintenance-free.

Aluma-Floats, virtually seamless, high-strength pontoons made of maintenance-free, salt-waterproof aluminum for lifetime use, have been developed by the Special Products Division of Kiekhaefer Corp. for specific waterfront applications.

Square-ended pontoons come in standard lengths of 15, 20 and 26 feet. They can be used in almost limitless combinations for wharves and docks, for barges, as bridges over small streams, and as "catamaran-type" float boats powered by outboard motors.

One-piece seamless construction reinforced by aircraft-type zigzag trussing contributes greatly to increasing the structural strength of these pontoons.

For complete information, write Special Products Division No. 3, Kiekhaefer Corp., Fond Du Lac, Wis.

Announces 9-Wheel Pneumatic Roller

Littleford Bros., Inc., 457 East Pearl St., Cincinnati 2, Ohio, has given its new self-propelled pneumatic roller the designation of Model 9S-14.

The 73-hp 9-wheel unit has 3,225-pound wheel load and 96 psi ground pressure. Engine-over-axle design permits lower center of gravity and an improvement on the self-locking differential gives full torque to either set of drive wheels, regardless of slippage on the opposite set.

Total ballast capacity is 167 cubic feet: 142 cubic feet of variable ballast; 25 cubic feet of permanent sand ballast. The Model 9S-14 also features complete wheel oscillation, both front and rear. Descriptive literature gives full facts.

Note the extreme flexibility of Littleford's new F-80 Axle, incorporated in the Model 9S-14 self-propelled 9-wheel pneumatic tire roller.

Removes Rust Deposit from Water Tanks

The largest water tank maintenance company in the nation, Pittsburg Tank & Tower Co., Pittsburg, Kans., calculates that steel water tanks deteriorate as much as 40% faster inside than out, and that an average of ¼-inch of rust scale is usually found lining the interior walls of tanks in service.

To maintain, recondition and preserve these tanks for years of effective service requires successful removal of this heavy, damaging rust scale deposit without impairing the permanent tank surface. The Aurand Manufacturing & Equipment Co., Cincinnati, Ohio, has developed a power tool for just such service.

The unusual cleaning action of the tool is supplied by a large number of cutters (toothed circular cutting wheels) loose-pinioned around a rotating head. The head revolves at high speed, throwing the cutters by centrifugal force against the surface being cleaned. Adjustable depth shoe can be set to limit impact of cutters so there will be enough clearance to remove foreign matter

(Continued on page 241)

NF

name's

NEENAH

and the products are GRAY and DUCTILE IRON CONSTRUCTION CASTINGS of finest QUALITY FINISH UNIFORMITY

Delivery is prompt: we have huge on-hand stocks of standard items

PLUS

15,000 patterns

PLUS

a daily production capacity of 500 tons in our two plants.

Name's Neenah . . . if we make it it's a casting . . . and the best.

New 168-page catalog shows our line. It's sent promptly when requested.

NEENAH FOUNDRY COMPANY

NEENAH • WISCONSIN

Chicago Office

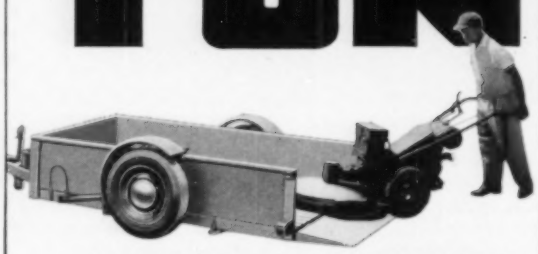
5445 North Neva Ave., Chicago 31, Ill.

TOPS 'EM ALL AS THE NO. 1 THIRST-QUENCHER

IGLOO is first for thirst and should be a regular fixture on every construction job. Have one for about every 6 to 8 workers and get more time spent on the job. Improves employee relations, too. Out of the 23 sizes and models available there's one exactly fitted to your needs. IGLOO portable water coolers have been time-tested and proved on thousands of tough jobs over the world.

Write for catalog. **IGLOO** *Memphis 18, Tenn.*

ONE MAN LIFTS A TON



...OF GROUNDS CARE EQUIPMENT!

. . . *hauls, unloads, re-loads it, too* . . . with Trailevator, the amazing hydraulic elevating trailer that lowers to ground level for easy, one-man loading . . . *lifts its own load* in seconds! Parks, golf courses, colleges, cemeteries . . . if maintaining grounds is your responsibility, find out how you can get more jobs done in less time, *at less cost* . . . with Trailevator.

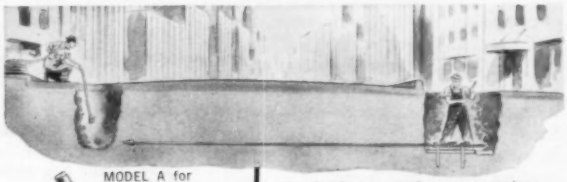
SEND TODAY FOR BULLETIN GC-100! *Trailevator Division, Magline Inc., P. O Box 46, Pinconning, Michigan*

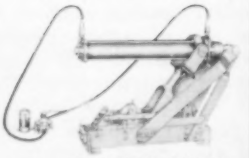
TRAILEVATOR

TAKES THE LIFT OUT OF LOADING

Trojan Pipe Puller & Pusher

installs or renews pipe under pavement *in less time* than required by any other machine!





Exclusive continuous action, which eliminates all resetting of grip, does the trick!

The Trojan combines pushing and pulling operations in one machine—eliminates all time-killing resetting of grip—keeps pipe continuously moving. Does the job at lower cost—in far less time.

Model A weighs 65 lbs.—requires only 5' trench. One man can easily install the average service. 15 tons of pushing pressure possible. Is also available for ½" pipe.

Model B (manual, hydraulic or air powered) needs only a 6' trench—has 3 speeds for different soils—is reversible in 30 seconds. Push pipe comes in 30" lengths, assures straight travel.

Write today for full details!

The TROJAN Manufacturing Co.

1113 Race Drive • Troy, Ohio

Purchasing News

An Aurand heavy-duty power cleaning tool removes pernicious rust scale from the interior of a water tank.

(Continued from page 239)

without biting into and damaging the permanent surface.

In addition to this heavy-duty electric model, Aurand makes power cleaning tools in small electric models and large pneumatic models. These tools range in weight from 7 to 21 pounds and can be used to remove any type of accumulation from road equipment, metal and masonry and other hard surfaces.

For additional information, write AURAND MANUFACTURING & EQUIPMENT CO., ELLIS ST., CINCINNATI, OHIO.

B-J's New Process Pumps

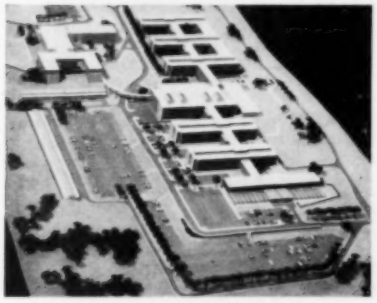
Interchangeability of components is the key feature of this new line of standard process pumps, introduced by the Byron Jackson organization.

In fact, Norman D. Jesse, vice president of Byron Jackson Pumps, Inc., reports that from two basic pump types, the SMJ and SMJI, up to 72 basic combinations are possible. Thus, by interchanging impellers, covers, nozzle arrangements, bearing construction, cooling methods and other components, the requirements for almost any given service can be met from standard, off-the-shelf parts.

Another important design feature of the line is an air-cooled bearing housing, which in many applications eliminates the need for a cooling water supply to the bearings.

(Continued on page 242)

Accurate Miniature Scale
MODELS



Interior and Exterior scale models of Office and Apartment buildings, Factories, Hotels, Motels, Shopping Centers, City Malls, Subdivisions, Renewal Areas, Products, Fast Delivery.

Send sketch or blue prints for quotation.

JOHN H. WELLS & ASSOCIATES
35 E. Wacker Dr. DE2-6033
CHICAGO 1, ILL. • ROME, ITALY
PANAMA, R. de P.

E·X·T·E·N·D
LANDFILL LIFE

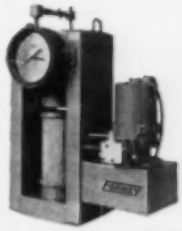
Operators report the Wilco Tepee® Refuse Burner is capable of increasing landfill life many times. Performance proved for efficiency, economy, safety. Write or call for full information.

wilco machine works, inc.
Phone WH 8-4555
Box 3897AC-6 Memphis 14, Tenn.

FORNEY
CONCRETE TESTERS

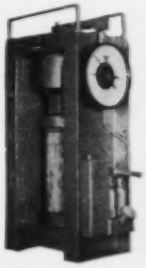
meet the exacting requirements of the construction industry's concrete testing applications.

Forney engineers are proven specialists in the concrete testing equipment field. For eleven years they have furnished the industry with quality testing equipment, accessories and supplies.



MODEL FT-30 HEAVY-DUTY PORTABLE CONCRETE TESTER

Latest addition to a complete line of portables, the FT-30 brings laboratory performance right to the job site. Self-contained power unit eliminates cumbersome hose and manual pumps. Loading speed is completely variable for accurate conformance to current ASTM standards.



MODEL FT-10 "JOBSITER"
LOWEST PRICED TESTER WITH HIGH PRICED FEATURES
250,000 LB. LOAD RATING
DESIGNED TO PROTECT OPERATOR FROM FLYING FRAGMENTS
FULLY PROTECTED GAUGES EQUIPPED WITH INSTANT CONNECTORS

ALL FORNEY EQUIPMENT UNCONDITIONALLY GUARANTEED

KNOWN THE WORLD OVER

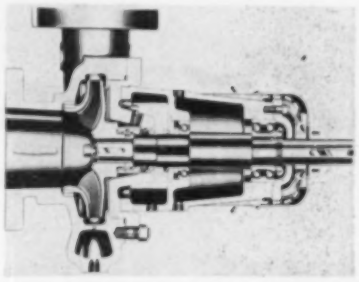
FORNEY'S, INC.
Tester Division
P. O. Box 310
New Castle, Pa., U. S. A.
Phone OLiver 2-6611
Cable : Forney's, New Castle

(Continued from page 239)

Model SMJ is designed for high temperature applications with either top or end suction. Vertically-split with centerline-support mounting, it has a water-jacketed stuffing-box for either packing or mechanical seal. Single or double stage construction is offered, as well as single or double suction. Available in capacities to 1200 gpm, differential heads to 1600 feet, pressures to 1000 psi, and temperatures to 850° F.

Model SMJI is for lower temperature service and is an internally sealed version of the SMJ, using mechanical seal as standard construction. It's designed for use with temperatures up to 400° F. All other capacities are same as the SMJ model.

An 8-page bulletin gives complete information on both the new SMJ and SMJI pump line. It can be obtained by writing to Byron Jackson Pumps Inc., subsidiary of Borg-Warner Corp., P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif.



Fan-cooled bearing housing on SMJ pumps draws air over bearings and across cooling fins cast in the housing.

Dallas Purchases 20 Larks

W. Lowell Fisher, Superintendent of Transportation, City of Dallas, Tex., receives the key to twenty Studebaker Lark sedans from Jack Hooker, general manager of Van Winkle Motor Co., Dallas. Looking on at the left is Wade Fielder, Lark sales manager of Van Winkle Motor Co. At the right is J. J. Spitz, Studebaker-Packard district sales manager, Dallas zone. Studebaker's 1960 Fleet sales rose 10% of total retail deliveries as compared with 8% in 1959.

ESSICK VR-28W VIBRATING COMPACTOR IGNORES COLD

PERMANENT PATCH LAID IN 10° WEATHER

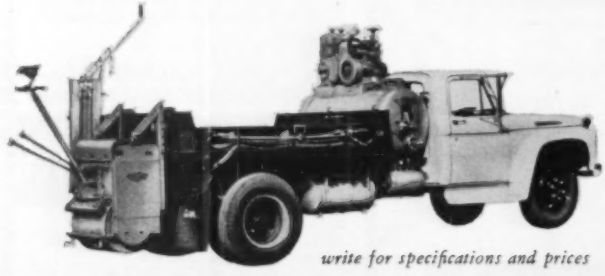
An Essick Model VR-28W Vibrating Compactor was used for winter street patching at St. Antoine des Laurentides on November 28, under the direction of Denis Legaré, Division Manager of District 5. Conditions for asphalt patching were at their worst as the temperature was 10°F. and the foundation was in very bad shape because the patch was put down where the previous material had not been compacted.

A cold stretch—4 feet wide by 15 feet long, and extending across the road—was rolled by the Essick Vibrating Compactor, supervised by Roger Poudrier of Desjardins Asphalt. The patch was quickly and densely compacted in two passes by the 28" wide, self-propelled unit, and was immediately opened to traffic. After more than 5 months of severe winter weather, the patch is like new and shows no deterioration. In normal cold paving conditions the asphalt would break up and have to be removed.

WINTER OR SUMMER—THE VR-28W GIVES THE BEST ASPHALT COMPACTION.

ESSICK "ONE TRIP" ASPHALT PATCH-FORCE UNIT

LOWEST COST STREET MAINTENANCE AVAILABLE



write for specifications and prices

NOW! The answer to the rising costs of city and county street maintenance in the form of a complete patching work unit involving one truck, two men, and Essick Road Maintenance Equipment:

- ESSICK VR-28W VIBRATING COMPACTOR, SELF-PROPELLED . . . WITH PATENTED CARRYING HOOKS, OFFERING IMMEDIATE DENSIFICATION—NO BARRICADES.
- ESSICK 200 GALLON TRUCK MOUNTED ASPHALT SPRAYER FOR TACK COAT AND SEALER COAT—AVAILABLE IN HEATED OR UNHEATED MODELS. 45 OR 58 CFM POWER UNITS.
- ESSICK 58 CUBIC FOOT AIR COMPRESSOR LARGE ENOUGH FOR RUNNING BREAKING TOOLS, PAINT SPRAY AND SAND BLASTING EQUIPMENT, ETC.
- ESSICK SH-20 ASPHALT SURFACE HEATER—PORTABLE, OPERATED BY ONE MAN. FIRED BY LP GAS FOR REMOVAL OF PUSH-UPS, BUMPS, GUTTER DRYING, ETC.

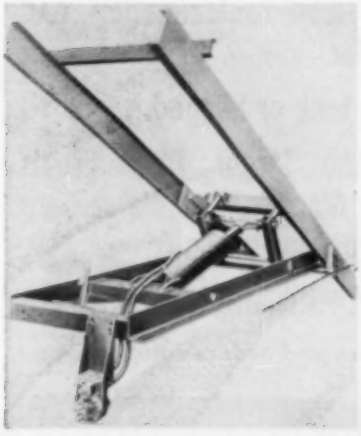
ESSICK MANUFACTURING CO.
affiliated with the T. L. SMITH COMPANY, Milwaukee, Wisconsin

1950 SANTE FE AVENUE
LOS ANGELES 21, CALIFORNIA

850 WOODRUFF LANE
ELIZABETH, NEW JERSEY

Hydraulic Dump Conversion Unit

The new Daybrook 7AF Low-Mount Hoist converts flat and stake bed trucks to rear dumpers at low cost. It's designed for body lengths



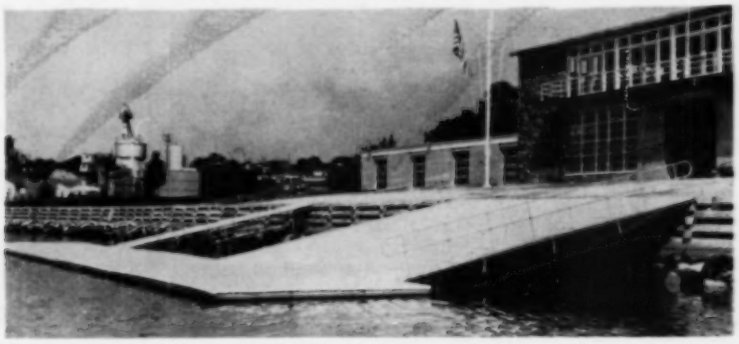
from 8⅙ feet to 18 feet. Lifting capacities range from 13,000 pounds to 25,400 pounds. The entire unit consists of reinforced steel subframe, 7-inch lifting cylinder, hydraulic pump and connections. For additional information, write EQUIPMENT DIVISION, YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO.

Floating Sandwich For Boaters

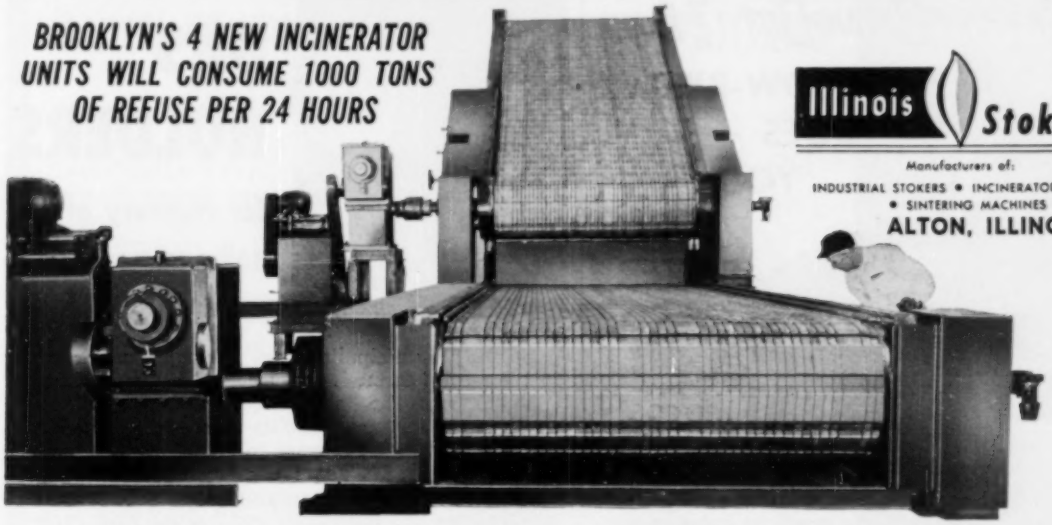
In Washington, D. C., a big, ruggedly constructed floating aluminum and foam sandwich (104′ x 15′) joined to a 36-foot by 30-foot ramp allows boaters and racing crews easy access to the Potomac River at the Water Sports Center Building.

Float construction is of standard 5-foot by 8-foot modular sections of Alumidock, a new product of Metallic Ladder Mfg. Corp. of Randolph, N. Y. Individual sections weigh 158 pounds, but have a carrying capacity in excess of 1,600 pounds. They are made up of aluminum and Styrofoam, foamed polystyrene of The Dow Chemical Co., Midland, Mich. The ribbed aluminum ramp is constructed of 6-foot wide increments, each tested for one-ton center loading.

(Continued on page 245)



BROOKLYN'S 4 NEW INCINERATOR UNITS WILL CONSUME 1000 TONS OF REFUSE PER 24 HOURS



Illinois Stoker

Manufacturers of:
INDUSTRIAL STOKERS • INCINERATOR STOKERS
• SINTERING MACHINES
ALTON, ILLINOIS

This giant bar/key stoker is one of four, custom-designed, for Brooklyn's new Hamilton Avenue Incinerator Plant. The drying stoker measures 8' wide x 22' long; burning stoker, 8' wide x 35' 3" long.

Original overlapping key design prevents jamming and possible damage — reduces sifting of material through grate. Automatic Feed and Continuous Discharge save time and labor.

Illinois Incinerator Stokers built to your Specifications

Supervised Assembly at your Plant

Bar/Key or Chain Grate Models. Sizes to 24 feet wide. Cast iron or cast steel links or keys.

Write Today for Complete Information.

TARCO *Dump Body* HOPPERS for Straight De-icing Salts

Gravity feed . . . **no moving parts.**

Tarco "Watchman" Hoppers in two sizes: **Model 3Y—3 cu. yd.; Model 5Y—5 cu. yd.** (Model 1Y—1 cu. yd. for "Jeeps" and pickups). **All welded** steel. **Top screens** and **tie-down clamps.**

Rugged "Watchman" Hoppers used with Type V-3 Electric Cab-Controlled "Scotchman" Spreaders make **ideal one-man operated spreaders.** Spread with body in normal "down" position. Install or remove the Hopper and Spreader in 20 minutes.

See your Tarco "Scotchman" Dealer about liberal trade-in allowances.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N. Y.

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P.O. Box 307 Amherst 3-2711

GRAVELY CLEAN-CUT 70

BIG MOW-BILITY DOES YOUR JOB BETTER!

in HALF the time at HALF the cost

Free your people for other important work; save man-hours. The Clean-Cut 70 ROTARY GANG MOWER gives you extra power, extra speed, extra maneuverability.

Ride at 5 MPH and cut a swath 70 inches wide! Change your cutting width *while you mow!* Trim, mow, mulch . . . all in one money-saving operation.

Unexcelled maneuverability with unique rear-wheel drive and steering. Mow slopes as steep as 30%!

There's a 35 and a 24 inch rider mower and a self-propelled 20 inch unit, too. See what Clean-Cuts can do for your grounds.

Ask your Gravely dealer for a FREE demonstration, or write for complete FREE LITERATURE to:

GRAVELY CLEAN-CUT MOWERS
P.O. BOX 736F DUNBAR, WEST VIRGINIA

GAS HOLDERS

for recovery of sewage gasses

Many municipalities are salvaging sewer gas for fuel, through the use of COLE gas holders similar to the one pictured. Send us your inquiries for tanks of this type—as well as for elevated water storage tanks . . . Take advantage of our 106 years of specialized knowledge and experience in serving America's municipalities and industries and discuss your problems with us. Visitors are always welcome at our plant. Stop by and see us.

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

Established 1854

R. D. COLE MANUFACTURING CO.
COLE
NEWNAN, GEORGIA

(Continud from page 243)

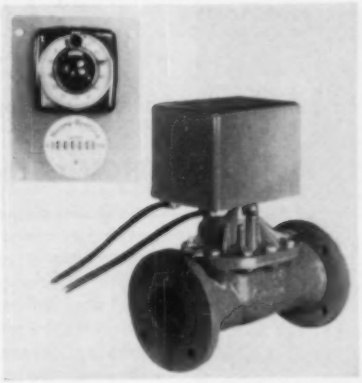
Low profile of the Washington installation (8 to 10 inches above the water line) enables convenient and speedy launching. And during Hurricane Donna it successfully proved that it could weather high winds. The unit also has sufficient flotation and ample ramp strength to support crowds of people expected during regattas.

Installation and removal are done with ease, important factors when winter on-shore storage is planned.

This custom-fabricated installation is typical of the aluminum waterfront equipment that can be furnished by METALLIC LADDER MFG. CORP., 2 SHELDON ST., RANDOLPH, N. Y., to meet community requirements. For details, and information on other equipment, write the company.

Coin-Operated Dispensing Meter

This new unit is to be used where there is intermittent or sporadic water consumption. It features a 6-digit straight-reading totalizer for permanent record of all flows. Delivery quantities may be regulated in volumetric units from 100 to 10,000. Remotely located coin box is furnished to accommodate 5, 10, or



25 cent coins, or with a special box for tokens.

The unit consists of a Sparling Main-line Meter, and tamper-proof coin box fitted with both slug rejector and bent coin return. The meter may be mounted in horizontal, vertical or slanted position.

Power supply required at the coin box is 110 volts a. c. A solenoid-controlled valve permits a preset volume of water to be dispensed whenever a coin, or token is inserted.

For complete specifications, write HERSEY-SPARLING METER CO., 225 N. TEMPLE CITY BLVD., EL MONTE, CALIF.

Heavy-Duty, Submersible Sump Pump

This cutaway view (see page 247) clearly shows Kenco's new Model 139 high-capacity, heavy-duty submersible pump with its one-piece cast-bronze base featuring 2-inch NPT discharge, free-flow volute design, and leg supports internally threaded to take adjustable lengths of standard ½-inch pipe. Model 139 moves 8600 gph at a 5-foot head; 6900 gph at a 10-foot head. A special extra-deep (1½") 2-vane non-clog impeller combines with a ½-hp motor to shred sewage and other solids to eliminate clogging action

(Continued on page 247)

AEROIL EQUIPMENT HANDLES SPRING PATCHING FASTER, EASIER, AT LEAST COST!

Stretch your road maintenance dollars this year with Aeroil asphalt patching equipment. Whatever your size, your requirements or your budget, you'll find the efficient, cost-cutting road maintenance tools you need at your local Aeroil dealer . . . and you'll find him nearby —ready with fast service on the complete line of Aeroil municipal equipment.

Write for a complete brochure on Aeroil municipal equipment

BITUMINOUS DISTRIBUTORS

PATCHING EQUIPMENT

KETTLES

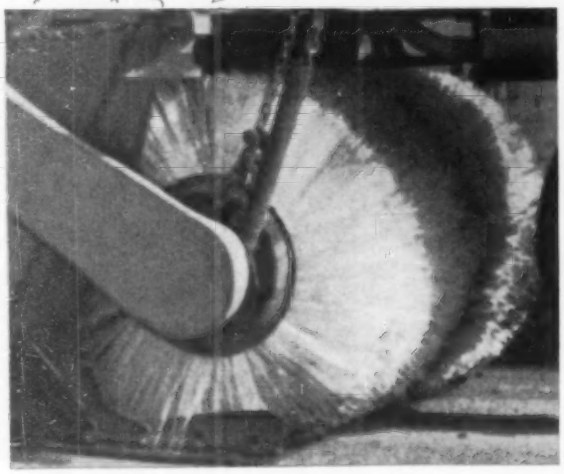
ASPHALT TOOLS

CUT BACK SPRAYERS

Aeroil SINCE 1917
MUNICIPAL EQUIPMENT

AEROIL PRODUCTS CO., INC.
69 WESLEY ST., SOUTH HACKENSACK, N.J.
4648 S. Western Ave. Chicago 9, Ill.
3217 Union Pacific Ave. Los Angeles 23, Calif.

JET AIRPORTS NEED SUPER-CLEAN RUNWAYS



DEPEND ON THE EFFICIENCY OF

Wynene® 18

POLYPROPYLENE BROOM FILLER

SPECIALLY ENGINEERED FOR ROTARY BROOMS

At city airports, rotary sweepers must do a thorough job of keeping runways clean — particularly for jet aircraft operations. With Wynene 18 broom filler, sweepers perform with greater efficiency. Unusually tough, these filaments withstand constant abrasion. Their built-in static resistance makes them safer — picked-up debris discharges easily. Greater flexibility, resistance to most chemicals, acids and greases, and low moisture absorption means long life and fewer replacements . . . with consequent lower maintenance costs. Standard specifications: .075 x 105 x 26" in natural. Other gauges and lengths to meet your needs.

DISTRIBUTORS:

FREDERICK H. CONE & COMPANY, INC.
181 FRONT STREET • NEW YORK 38, N.Y.

MANUFACTURERS:

THE NATIONAL PLASTIC PRODUCTS COMPANY

Saran and Nylon Fibers—Nevamar High-Pressure Laminates—Wynene Extruded and Molded Products

ODENTON, MD. • NEW YORK, N. Y. • MIAMI, FLA. • CHICAGO, ILL.
DENVER, COLO. • PORTLAND, ORE. • LONG BEACH, CALIF. • SAN FRANCISCO, CALIF.

BUILT TO "take it"

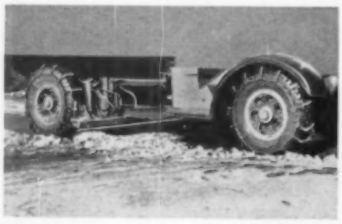
WAUSAU PRODUCTS

The WORLD'S MOST COMPLETE LINE of SNOW REMOVAL EQUIPMENT!

A Versatile year-round Maintenance Unit

- Wausau Snow Plows - Vee and Blade
- Wausau Snow Wings
- Wausau EXPRESSWAY
- Wausau Sno-Thro Loader and Thrower
- Wausau Material Spreaders
- Write for full details on all Wausau Products . . . Literature available on every item.

TRUCK GRADER — ICE BLADE



Maintains, cuts and grades all types of gravel and dirt roads, eliminates ruts, holes, and washboards. For winter operation it planes, breaks, and removes ice and hard-packed snow hazards . . . truly a versatile year 'round maintenance unit . . . full power hydraulic cab control.

WAUSAU IRON WORKS *Pioneer Snow Plow Builders* WAUSAU, WISCONSIN

CUTS WEEDS • MOWS LAWNS • MULCHES LEAVES

The rugged

ROOF *VP* MOWER

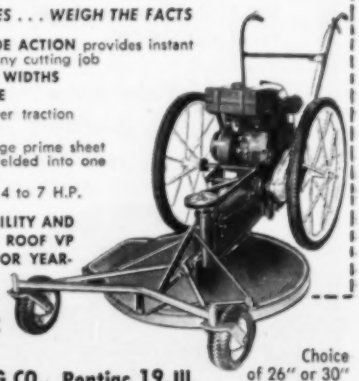
Nearest thing to power-steering in a heavy-duty mower!

The new Roof Swivel-Glide mower is engineered to handle all heavy duty mowing requirements from heavy weed and brush cutting to spacious lawn areas.

COMPARE THE FEATURES . . . WEIGH THE FACTS

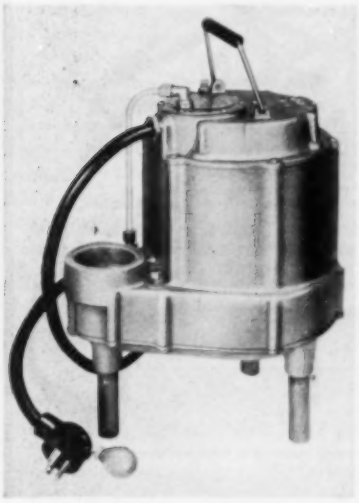
- **VARIABLE PITCH BLADE ACTION** provides instant blade adjustment for any cutting job
- **26" OR 30" CUTTING WIDTHS**
- **OIL BATH GEAR DRIVE**
- **26" WHEELS** for greater traction and maneuverability
- **CHASSIS** is heavy gauge prime sheet steel reinforced and welded into one rugged unit
- **CHOICE OF ENGINES** 4 to 7 H.P.

VERSATILITY, MANEUVERABILITY AND RUGGED, LONG LIFE MAKE ROOF VP MOWERS YOUR BEST BET FOR YEAR-ROUND MAINTENANCE



For FREE FACT FOLDER write:
ROOF MANUFACTURING CO., Pontiac 19, Ill.

Choice of 26" or 30" Cutting Widths



(Continued from page 245)

that often occurs in septic tanks and sewage systems. For catalog information and engineering data, write KENCO PUMP DIVISION, THE AMERICAN CRUCIBLE PRODUCTS CO., 1305 OBERLIN AVE., LORAIN, OHIO.

Lures, Traps, Kills Night-Flying Insects

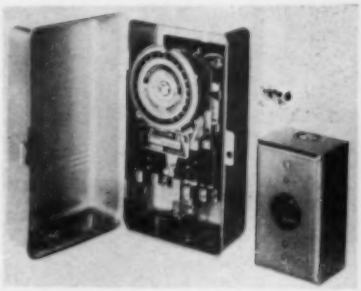
Utilizing a special fluorescent ultra-violet light, the new Night Hawk Black Light Insect Control attracts night-flying insects, sucks them in, and bags them in a mesh bag. Operation is simple, clean and effective. No chemicals, sprays or insecticides are involved.

Two models are available. Both work economically and deliver continuous protection. For details and application, write MCDONOUGH POWER EQUIPMENT, INC., MCDONOUGH, GA.

New Time Control for Street Lights

A time switch with sensitivity to light for ON/OFF control of lighting puts the street lighting or any other outdoor lights on automatically, as needed, and off automatically when it is no longer desired, at any preset hour. The automatic OFF switching means lights do not have to remain on until dawn as is the case

(Continued on page 249)

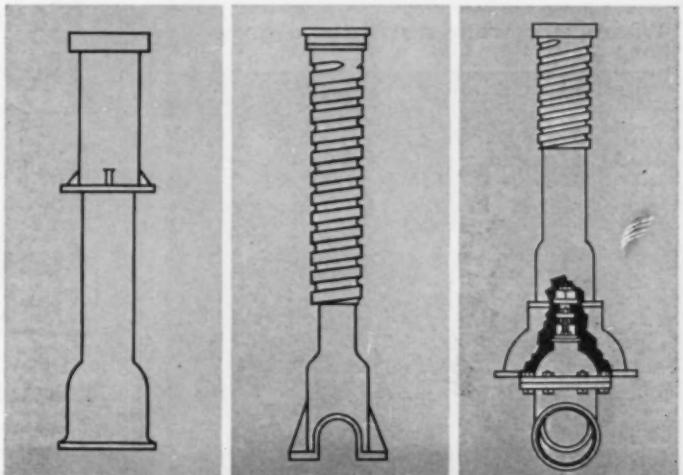


BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



2 pc. sliding type adj. 5¼" valve box

2½" water or gas ext. service box

3 pc. screw type 5¼" valve box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

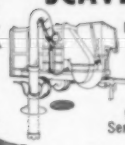
SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

Write or wire Dept. J for Bulletin M11.

BOX 55—STATION B DE 6764 BUFFALO 7, N. Y.

Your Problem:
LEAVES & CATCH BASINS
Your Answer:
The GOOD ROADS

SCAVENGER

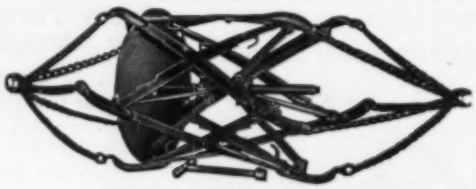


Powerful multi-purpose unit. Vacuums leaves and debris. Cleans catch basins in minutes to 8 ft. depths. Send for brochure.

Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO

EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and cake sediment like this.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. **Nappanee, Ind.**

Where you want nothing to grow

SS WEED-KILLER

Gets them *fast*
Gets them *all*
Keeps them *off*

Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. . . . Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth. . . . Reduces fire hazard by eliminating flammable vegetation close to industrial locations. . . . Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass. . . . Cuts ground maintenance costs drastically. . . . One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

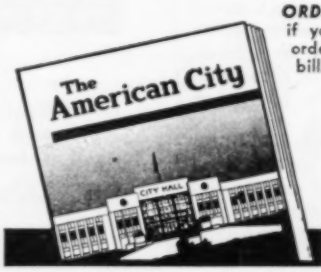
Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

dependable DOLGE
WESTPORT, CONNECTICUT

Make Sense Out of Your Water Rates

This is the book that will tell you how to determine—

- **Proper water rate earnings**
- **Fair out-of-city charges**
- **Logical fire-protection charges**
- **Air conditioning, construction, service tap and other charges**



ORDER TODAY at $2.75 per copy if your payment comes with your order. Otherwise $3.00 if you wish bill.

The American City
470 PARK AVE. SOUTH
NEW YORK 16, N. Y.

a ***Buttenheim*** publication

(Continued from page 247)

with ordinary photoelectric controls.

The Astronomic control (the unit now widely used for similar control applications), mechanically times to the sun's schedule, turns lighting ON at sunset daily. However, on dark, stormy, or foggy afternoons, when light is needed, it will not turn lighting on until the actual time of sunset. The photo-sensitive time control will! Thus, a dark summer storm at 4 p. m. turns on the lights. The manufacturer reports that this device is especially suitable for protective lighting and parking lot lights.

For further details, write TORK TIME CONTROLS, INC., MOUNT VERNON, N. Y.

Hydraulic Backhoe for Cat Loaders

A new backhoe, built for use with Caterpillar Models 922, 944 and 966 Wheel-Type Loaders, has been announced by the WARNER & SWASEY COMPANY, BADGER DIVISION, CLEVELAND 3, OHIO.

The fully hydraulic attachment snaps on or off in less than a minute, without any tools, reports the manufacturer. Other features include 180° continuous swing, 180° bucket tilt, 12⅓-foot digging depth, 15½-foot reach from center of rotation, and 10,000-pound breakaway at bucket teeth. Outriggers are individually controlled and a turret-type operator's seat is offered.

The Warner & Swasey Model 110 Hydraulic Backhoe is designed specifically for use with Caterpillar-built machines, and is being offered through authorized Caterpillar dealers only.

Outdoor Park Grill

Brillion Iron Works' new outdoor municipal park grill features a wide, flat grill area, 360° rotation and easy access to clean out. More even cooking with no hot spots is possible because fuel may be easily spread out evenly by raising the grill. The grill is also theftproof, according to Brillion Iron Works, Brillion, Wis.

NOW! AUTOMATIC TRAFFIC CONTROL

The new Movatron automatic traffic control system changes traffic patterns . . . automatically, quickly, and safely . . . at desired intervals

WITH NO DIRECT LABOR!

For complete information write, wire or phone

NATIONWIDE TRAFFIC ENGINEERING PRODUCTS CORP.

2535 Mt. Carmel Avenue, Glenside, Pa. TUrner 7-8270

ETNYRE

Street Flushers

"THE MACHINE OF A DOZEN USES"

KEEP YOUR STREETS "HEALTHY"

During the hot, dusty months of midsummer an Etnyre Sanitary Street Flusher will keep your streets clean, cool and healthful by reducing bacterial count and disease hazard, laying dust and cooling hot pavements. Streets up to 42 feet wide cleaned in ONE TRIP—even under parked cars. See your Etnyre dealer for full information or write us today!

E. D. ETNYRE & CO., Oregon, Illinois

Announces New 1-Yard Shovel

UNIT CRANE & SHOVEL CORP., MILWAUKEE, WIS., has augmented its line of power cranes and excavators with the Model 271-C, a 1-yard shovel which converts easily to dragline, trenchhoe, clamshell, lift-crane, and magnet crane front ends.

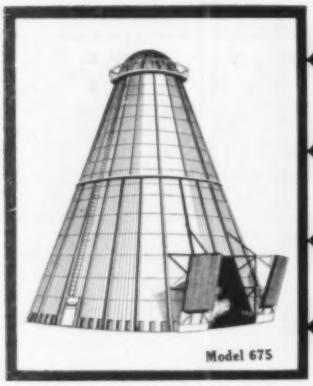
Compact swing circle gear assembly has upper works mounted on a large diameter, double live ring of steel balls running in hardened races. This results in a friction-free, fast swing, reports the manufacturer. Center pin mounting, hook and turntable rollers, and roller path have been eliminated, so that day-to-day lubrication and maintenance practically are not required.

A cooling system which dissipates heat contributes to longer life of the swing clutches on the new Model 271-C. For details and descriptive literature, write to the company.

Sewage Treatment for Small Communities

The Model R "Oxigest" is the newest sewage treatment plant in the Smith & Loveless line. It's available in 17 sizes and is designed to be field-erected at the job site. Fabrication will be in sizes ranging from 30,000 gpd to 500,000 gpd to serve small communities, subdivisions and other facilities from 300 to 5,000 persons. Former "Oxigest" peak was 35,000 gpd.

Smith & Loveless will supply, assemble and erect the Model R units on the purchaser's foundation with all material and equipment necessary for a complete, ready-to-operate sewage treatment facility.



Burns up to 7 Tons per hour when burning continuously

May be conveyor fed for greater capacity.

Huge doors admit dump truck or bulldozer

Easily erected on site by unskilled workmen.

INDUSTRIAL
BURN-O-MATIC
REFUSE BURNER

Manufactured in eleven different sizes . . . engineered for maximum burning efficiency. Burn-O-Matic is the ideal way to burn combustible trash and refuse. Big capacity . . . small cost.

YES AIR POLLUTION CONTROL EQUIPMENT AVAILABLE

For information, write
Burn-O-Matic Div. AC-061
P. O. BOX 5182 MEMPHIS 12, TENN.
DESIGNED, ENGINEERED AND MANUFACTURED BY
INDUSTRIAL BLOW PIPE COMPANY

STREET SIGNS

And other Municipal Identifications

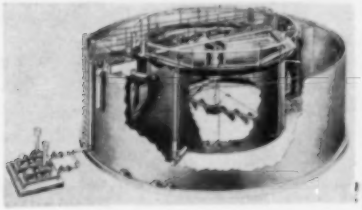
HISTORICAL MARKERS
*
GOLF COURSE MARKERS
*
MUNICIPAL BUILDING PLAQUES AND LETTERS
*
MEMORIAL PLAQUES

You name it—we can make it. Special coatings assure long life, because they're resistant to the ravages of weather, airborne acids, alkalies and other contaminating materials. Outstanding 24-hour visibility due to their Prismo reflectorized letters. Also in plain satin finish. *Send for brochure "AC".*

LAKE SHORE MARKERS INC

CAST Lifetime ALUMINUM

654 W. 19th St. • Box 59 • Erie, Pa.



Normally the purchaser will be responsible for excavation, foundation slab, back-filling, inlet and outlet sewer connections and power supply to the electrical control panel.

Additional information about the Model R "Oxigest" can be obtained from SMITH & LOVELESS, DIVISION-UNION TANK CAR COMPANY, LENEXA, KANS.

Horton's New Coolers

These plastic-lined models are available in 2-, 3-, 5- and 10-gallon sizes and are for either hot or cold liquids.

Urethane foam is used as insulation inside the galvanized steel, corrugated outer wall to form an efficient, light-weight insulation. These coolers are said to be over 20% lighter than metal-lined coolers and twice as efficient in maintaining hot or cold liquids.

A new seamless plastic liner holds the liquid. It is replaceable, offers better sanitation, complete freedom from taste and odors, and has high temperature resistance. Recessed

(Continued on page 252)

CLEAN LINES... Clear Profit!

CLEAN LINES ABOVE!—With its low profile, and front and rear equipment mounted close, this Allis-Chalmers unit is integrated to give you bonus capacity for dozens of jobs. Operators work confidently—sure of their equipment—able to see the whole operation easily.

CLEAN LINES BELOW!—With axles, transmission case, pan and power steering rams compactly organized, the unit works over rocks and dirt with little chance of "hanging up." Operators move free and easy all over the job site.

IT DOESN'T COST TO FIND OUT how Allis-Chalmers *clean lines* lead to *clear* profit! Get the facts from your dealer now or write Allis-Chalmers Mfg. Co., Utility Tractors and Equipment, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

NOW! ALL-ALUMINUM CHAIN LINK FENCE!

New Permanence!
New Freedom from Maintenance!

Here's the proven protection of chain link...in long-life aluminum. Defies corrosion! Never needs painting! New high-strength alloy stands solid and handsome through the years.

Aluminum Chain Link is specified for more and more plants, highways, parks and playgrounds...because it saves so much on painting and maintenance.

Call your Anchor Man for more information. Write for free catalog: Anchor Fence, Dept. AC6, 6661 Eastern Ave., Baltimore 24, Md.

ANCHOR FENCE
made of
REYNOLDS ALUMINUM

Watch Reynolds TV show: HARRIGAN & SON", Friday evenings, ABC-TV Network.

Purchasing News

(Contniued from page 251)

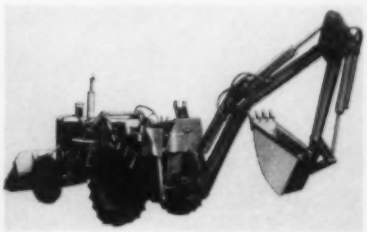
spigot is of moulded plastic; it is also replaceable and is said to eliminate heat transfer from within the cooler. A lid retainer rope secures the lid to one of the carrying handles.

For further information, write HORTON PRODUCTS, INC., P. O. Box 7156, MEMPHIS 18, TENN.

New Loader, Trencher for Oliver Tractor

WARE MACHINE WORKS INC., WARE, MASS., manufacturer of hydraulic earthmoving equipment, announces the availability of new matched equipment for the Oliver 770 Industrial Tractor.

The full-framed, high-speed 778 Industrial production loader has ¾-cubic yard rated capacity and 66-inch width bucket; 40° bucket breakout; 8,000-pound breakout capacity; automatic bucket leveling, and a rated lift of 5,100 pounds to full height. The 22-gpm hydraulic system is sealed and filtered.



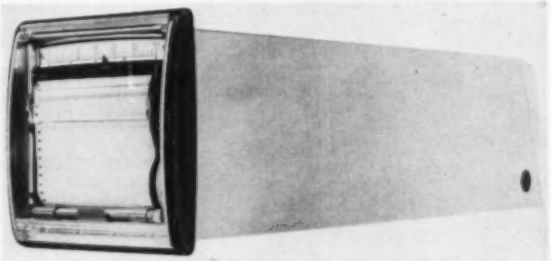
Model 450 Hydro-Trencher, specifically matched for operation in combination with the 778 Industrial Loader, features a quick detach system, a digging reach of 20 feet 7 inches from center line of rear axle, bucket breakout capacity of 10,100 pounds, and digging depth in excess of 14 feet.

For complete information on both Ware units and for latest literature, write to the company.

Freeway Walkover Bridge

This walkover bridge (186' x 7') carries pedestrians safely out of reach of onrushing cars, over a high-speed freeway in Des Moines, Ia. Pittsburgh-Des Moines Steel provided 18 tons of reinforcing steel for this structure and 11 tons of fabricated steel for the 551 feet of handrail used in the bridge.

Transistorized Telemetering System



An all-electronic telemetering system of totally new design offers cycles of two seconds and less to provide high scanning speed and more sensitivity to rapidly fluctuating measurements. The Foxboro Co., which developed the system, states that it has few moving parts, no mechanical cam followers, no clutches and no mercury switches. Synchronization is not required, virtually eliminating traditional tele-

meter operating and maintenance problems.

The transmitter features a photodiode detector which scans input position in relation to a cam etched on glass and operates sealed dry switch contacts in the transmission system. There is no contact, hence no friction, between input arm and cam.

The receiver has convenient plug-in components, transistorized amplifier, powerful servomotor, and is insensitive to supply frequency changes.

Any of three transmission links may be used to connect instruments up to several hundred miles apart: leased telephone or private two-wire lines, high tension power lines, audio frequency or microwave channels.

Choice of transmitted enclosures includes compact, weatherproof indicator or universal circular and rectangular case indicators. Receivers are panel-mounted, 4-inch strip-chart recorder or rectangular case recorders or indicators.

For complete information, write The Foxboro Co., Foxboro, Mass.

Pavement Markings Go Down Faster

Prismo Safety Corp., Huntingdon, Pa., has developed the "Plasticator" so that 4-inch and 6-inch width rolls of Plastix "SD," a permanent-type pavement marking with built-in adhesive backing, can be applied more quickly.

In operation, boxed rolls of Plastix are placed on the Plasticator. As it is pushed along the protective paper backing on the Plastix is

(Continued on page 254)

NEW CATALOG!

WRITE TODAY FOR
100-PAGE
Municipal Supplies Catalog
SPECIFY YOUR TITLE ON YOUR REQUEST

W. S. DARLEY & CO.
CHICAGO 12

? Chemical Problems ?

Let us solve them and save you $$

- SEWAGE SPECIALTIES
- INSECTICIDES
- WEED KILLERS
- EQUIPMENT MAINTENANCE

Satisfied customers include the City of Millville, New Jersey. Mr. R. M. Ingles, Superintendent of the Sewer Department, writes: "Your newly improved *'Dizolvo'* is of a superb quality. We enjoy doing business with you."

Municipal Specialists
CARDINAL PRODUCTS CO.

Chemicals of Merit
Levittown, N. J.—TR7-1080

Architect: Walter M. Gaffney Associates, Inc., Hyannis, Mass.

"... our Anchor® Fence prevents double trouble."

King Philip Regional High School, Wrentham, Mass.

"Our high school's football field borders on the back yards of several private homes on one side, a road on another—so you could say our Anchor Fence prevents double trouble. One, it keeps our activities within our own grounds. Two, it keeps our grounds free from outsiders. About 3500 feet of Anchor Fence have been doing both jobs beautifully since 1957—and all with no maintenance!"

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. For our free catalog, write: ANCHOR FENCE, 6564 Eastern Avenue, Baltimore 24, Maryland.

ANCHOR FENCE
Division of ANCHOR POST PRODUCTS, INC.

Plants in Baltimore, Md.; Houston, Texas; Whittier, Calif. Sold direct from factory branches in principal cities.

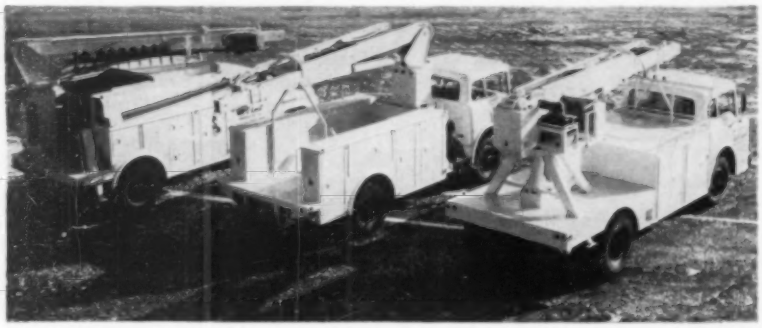
(Continued from page 253)

stripped off, the Plastix "SD" is placed into position on the pavement, and a roller applies just the proper pressure to assure the start of a good, permanent bond.

Hydraulic, Continuous Rotating Derricks

These three new models of the Commander Series continuous rotating derricks are in full production at Tel-E-Lect Products Inc., Minneapolis, Minn. All have complete hydraulic control and drive systems plus 360° continuous rotation. All horizontally lift 2,000 pounds with stinger extended to 23 feet and 8,000 pounds with derrick at 80°. Sheave height is 33 feet, stinger extended. At 80° the radius from the derrick center for working within the body area is 22 inches, stinger retracted; 39 inches, stinger extended.

The "SM" (for side mount), at the left, is designed for fast, easy installation to standard line construction bodies and may be installed on either street or curb side of the chassis.



The "CM" (for center mount), is in the center of the accompanying photo. It allows excellent side workability with large rear platform and long over-hang. Standard equipment includes dual right and left controls.

The "RM" (for rear mount) is entirely new to the pole line construction industry. Its derrick-mounted Command Post incorporates all controls and gives the operator complete command of the job in all working positions. It is said to be unique in new-style-body design and over-rear-wheel installation.

All three models in the Commander Series adapt themselves to a wide selection of optional equipment and accessories, such as diggers, aerial baskets and extension arms, jibs, wire stringing equipment and take-up reels.

Descriptive literature covering specifications and all applications can be obtained from TEL-E-LECT PRODUCTS, INC., 10001 MINNETONKA BLVD., MINNEAPOLIS, MINN.

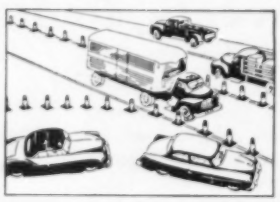
HERE is the answer to
EMERGENCY BARRICADES

Lightweight, Easily-Adaptable

SAFE-T-CONE
TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.



Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write
RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

TAX EQUALIZATION APPRAISALS

Offering a background of a quarter century of

unduplicated experience producing high quality

appraisals for local Tax Equalization Purposes

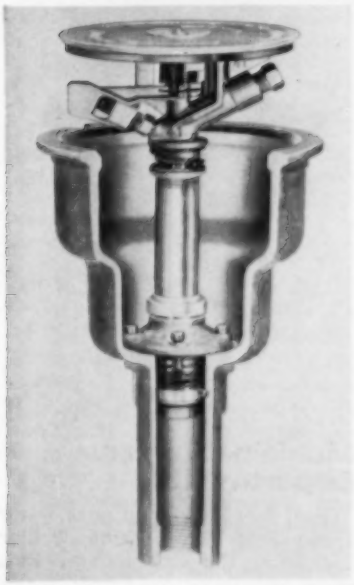
THE STANDARD OF EQUALITY IN TAX EQUALIZATION

REVALUATIONS
CLT
APPRAISALS

COLE • LAYER • TRUMBLE COMPANY
11 WEST MONUMENT AVENUE • DAYTON 2, OHIO

BRANCH OFFICES
302 West Ashbridge Street, West Chester, Penna.
208 East Boulevard, Charlotte, North Carolina
415 Congress Street, Portland, Maine
84 Peachtree Street, N.W., Atlanta, Georgia

Concealed Sprinklers



Rotor Pop-Ups are for use on automatic or manual controlled underground systems on large turf areas. They operate equally well on hills or level ground and are available in part or full circle sprinklers, the full circle models being available with single or two nozzle sprinklers. There are rubber-covered models for use on athletic fields and playgrounds.

Features include a positive oscillating arm drive, bearings protected from wear, and heavy-duty retractor spring on the sliding pop-up members to assure closing of the sprinkler when pressure is off. For ease of maintenance, the entire internal assembly is removable from the top, without removing the case from the riser.

Rotor Pop-Up Model No. 41 is shown above in open, operating position. Part of the casing has been cut away to show streamlined internal assembly. When not in operation, the unit retracts into the ground.

For further information on Rotor Pop-Ups, write National Rain Bird Sales & Engineering Corp., Azusa, Calif.

Diaphragm Pumps

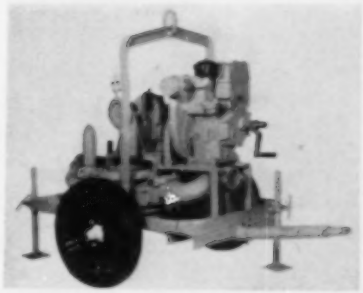
A series of four new air-cooled diesel-powered self-priming single and double diaphragm pumps, available with 2-, 3- and 4-inch openings, have been announced by Rice Pump & Machine Co.

Capacities range from approximately 1,500 gph to 18,000 gph. Diesels are 4-cycle, crank start types; electric starters are available as optional equipment. Swing-type valves are standard; ball-type valves are optional at increased cost.

High-speed trailers with 4.00 x 12 and 5.90 x 15 pneumatic-tired wheels and tow tongues can be used. Skids and conventional wheel mountings are available.

Bulletin DP1-30 covers this new

(Continued on page 256)



Perfect
WATER LEVEL Control

G-A CUSHIONED ALTITUDE CONTROL VALVE

Regardless of the size of the elevated tank, the Golden Anderson Altitude Control Valve automatically maintains a constant water level and prevents overflow. Available in sizes 2" to 36", this valve is normally housed in an underground pit to protect from inclement weather.

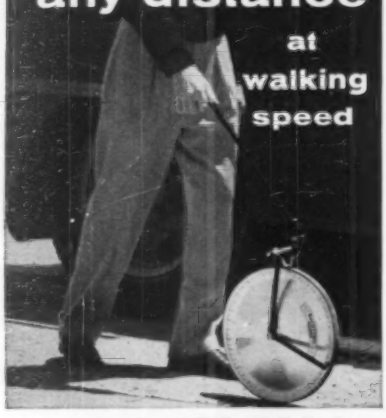
Bulletin W-4B has complete technical data.

Golden Anderson Valve Specialty Company

1200 RIDGE AVENUE, PITTSBURGH 33, PA.

Designers and Manufacturers of VALVES FOR AUTOMATION

Measure any distance at walking speed



records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

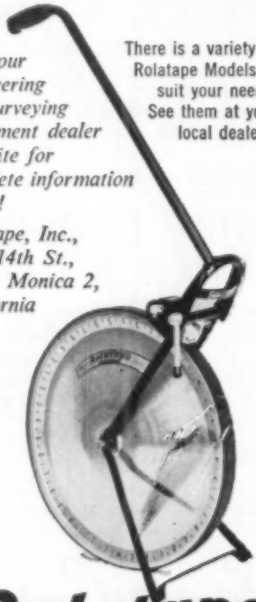
Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.



Rolatape

Measuring Wheels

Purchasing News

(Continued from page 255)

line; for a copy, write RAY SMITH, SALES PROMOTION MANAGER, RICE PUMP & MACHINE COMPANY, BELGIUM, WIS.

Barricade Flasher

Dietz' No. 665 Visi-Flash incorporates the first optical acrylic lens specifically designed for use in flashing warning lights. Light is evenly dispersed from the center of the lens to the edges. Twin 7-inch amber lenses mount in a visored diecast head assembly, which may be swiveled 180° for safe aiming of the warning flash.

The unit delivers a .10 of a second flash duration with a flash rate of 65 flashes per minute. Approximate signal time is 750 hours with one battery or 1500 hours with two batteries. It is available with as many as 30 optional circuits and is able to meet any state specification, according to the manufacturer.

For additional information, write JOSEPH H. EMERY, JR., ASSISTANT TO GENERAL SALES MANAGER, R. E. DIETZ COMPANY, 225 WILKINSON ST., SYRACUSE 1, N. Y.

Municipal Water Departments

Good news for municipal water departments comes from Master Leakfinding Corporation of America, which announces an Actual Water Leak Loss detection service aimed at drastically reducing unsuspected water loss in any water department system.

In operation, engineering special-

TWO PIECE

5¼" two-piece sliding or screw type cast iron valve boxes, covering 4" through 10" valves.

ADJUSTABLE VALVE BOXES

THREE PIECE

5¼" three-piece valve boxes supplied with bases for 4" through 24" valves. Interchangeable parts.

Manufactured to the highest standards for sure service.

A complete line of service and roadway boxes, manhole rings and covers. (Covers marked gas or water)

OPELIKA FOUNDRY CO.

OPELIKA, ALABAMA

P. O. Box 326 • Phone SHerwood 5-7672

HOTTEST STREET PATCHER IN TOWN

the Original

HEATED *Asphalt Rollers*

5 TON COMPACTION — WATER-TIGHT SEAL

OVER 300 CITIES REPORT, "HOT ROLL is the major advancement in recent years for asphalt street repair"!

WRITE FOR A DEMONSTRATION TODAY!

Ellis **Distributing Company**
Liberty, Missouri

ists analyze water distribution systems, determine leak magnitude, solve leak problems and accurately pinpoint specific leaks for repair—without digging. Leaks as small as 0.047 of an inch in diameter can be pinpointed.

Interested water department superintendents and municipal officials should write to MASTER LEAKFINDING CORPORATION OF AMERICA, 368 N. KENILWORTH AVE., ELMHURST, ILL. for complete information.

Purchasing News Briefs

• since the introduction of the 1961 models, police departments and other municipal and state agencies have purchased nearly 3,200 **Dodge** cars—about 2,300 of the total have been police cars. The largest orders for police state and municipal units have come from the State of Washington, the California Highway Patrol, the City of Los Angeles, and the states of North Carolina, Nebraska and Florida.

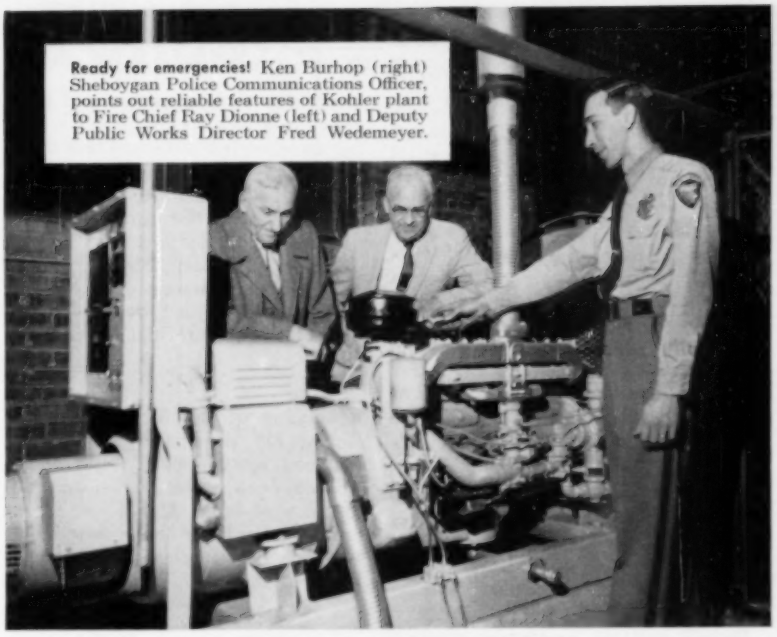
• **Pan American Consultants,** Professional Engineers and Planners, announce establishment of planning and engineering offices at 400 Montgomery St., San Francisco 4, Calif. (main office); 740 W. Whittier Blvd., La Habra, Calif.; and P. O. Box 685, Solvang, Calif.

• **Multiplex Mfg. Co.,** Berwick, Pa., manufacturers of Crispin air valves and multi-cold condensing units, celebrates its Golden Anniversary this year. Crispin air valves are used primarily by the water and sewage process and hydro-electric industries to control air in lines carrying liquids.

• **The Heil Co.** has moved its Chicago district sales office to 438 Sherwood Rd., La Grange Park, Ill.

• a new district sales office and warehouse to serve customers in Illinois, Michigan, Minnesota, the Dakotas, Wisconsin and northern Indiana has been completed by the Liquid Meter Division of **Neptune Meter Co.,** New York 20, N. Y. It is located in the Chicago metropolitan area at 65 Scott St., Elk Grove, Ill. Operations at the Chicago office will be transferred to the new location about June 1. The building will contain complete equipment for testing

(Continued on page 258)



Ready for emergencies! Ken Burhop (right) Sheboygan Police Communications Officer, points out reliable features of Kohler plant to Fire Chief Ray Dionne (left) and Deputy Public Works Director Fred Wedemeyer.

KOHLER ELECTRIC PLANT

...power safeguard for Sheboygan Civil Defense

One of the cities best equipped for Civil Defense, Sheboygan, Wisconsin, has a 50 KW Kohler electric plant for automatic emergency electricity when regular power fails.

Vital facilities protected are: police radio and teletype; Civil Defense sirens; electric garage door and gas pump; City Hall and Defense Center heating; telephone service including police and fire departments; battery charging for alarm signals.

Kohler electric plants with automatic transfer switch are fully packaged for immediate, unattended take-over of emergency loads. Known everywhere for reliability . . . Sizes to 115 KW, gasoline and diesel. Write for folder K-2.

KOHLER CO. *Established 1873* KOHLER, WIS.

KOHLER OF KOHLER

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS
ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

New Kohler Engine & Electric Plant factory building—12 acres of manufacturing space.

(Continued from page 257)

and reconditioning all sizes and types of Neptune water, industrial and petroleum meters.

• word has been received of the consolidation of the Daybrook Hydraulic Division and the Ottawa Steel Division into the **Equipment Division of Young Spring & Wire Corp.**, Bowling Green, Ohio. T. W. Helwig, who has served as Group Executive over the two separate divisions, has been appointed president of the Equipment Division.

• two Texas developments in the **Byron Jackson Pumps** organization of Los Angeles, Calif., subsidiary of Borg-Warner Corp., include establishment of a new Midland District Office under the supervision of Ted Powell, and the promotion of Paul Frisbie as manager of the Plainview District office.

• Holan Corporation reports that its authorized and qualified Holan Live Line Bare-Hand Team is making a coast-to-coast tour of electric utility companies to demonstrate and train crews in a new technique for working barehanded on energized high-voltage lines. The Holan team will teach safe practices to utility personnel, explain the equipment, and demonstrate through certain job applications the basic concept of the new method. Interested utility officials should contact **Holan Corporation,** 4100 W. 150th St., Cleveland 35, Ohio.

• opening of an office in Chicago, Ill., at 111 W. Monroe St., is announced by **Centriline Corp.**, which specializes in rehabilitation and lining of pipe lines. Donald A. Stolzman, who will be headquartered in the new office, has been appointed Midwest district manager.

• new field service and sales representatives appointed by **Precision Multiple Controls, Inc.,** Ridgewood, N. J., are: Shaffer & Nelson, with offices at 1940 Occidental, Seattle, Wash.; 1001 S. E. Water Ave., Portland, Ore.; 1835 W. Broadway, Spokane, Wash.; and 1415 S. Main, Salt Lake City, Utah; John P. Bagoy Associates, P. O. Box 1005, Anchorage Alaska; and Public Service Supply Co., Inc., 1182 Bates Rd., Cleveland, Ohio. Precision makes photoelectric controls, adaptors and mountings for outdoor lighting.

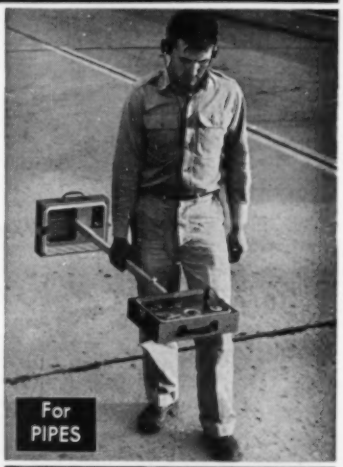
• **The Cooper-Bessemer Corp.,** Mount Vernon, Ohio, expects its new warehouse and service office in Omaha, Neb. to be in operation by August 1. The 3,000 square foot structure is located at 16th and Reed Streets. The building will stock repair parts to service Cooper-Bessemer engines and compressors in the company's North Central sales district.

• **Southwestern Plastic Pipe Co.** of Mineral Wells, Texas, has purchased all common stock of Ken-Way Plastic Products Corporation, Phoenix, Ariz., to be known as Southwestern Plastic Pipe Company of Arizona. Officers of the Texas firm will assume similar positions in the new company. M. B. Crawford, Jr., who has been associated with Ken-Way since 1958 in its management and as

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector "Dualtronic" Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.



The GOLDAK Company, Inc.
Leading Electronic Manufacturers
Since 1933
1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

Four Fine Facilities in PITTSBURGH

ALLEGHENY MOTOR INN Opposite Greater Pittsburgh Airport. 60 air-conditioned rooms, tile bath, TV, radio, phone. Superb restaurant and cocktail lounge. Year-round swimming pool. Courtesy car to and from airport. **AMherst 4-7790**

HOTEL PITTSBURGHER In the heart of the Golden Triangle. 400 outside rooms, bath, TV, radio, air-conditioning. General Forbes Lounge & Dining Room. **ATlantic 1-6970**

JACKTOWN MOTOR HOTEL 1 mile west of Irwin Interchange on Route 30. 60 air-conditioned rooms, TV, telephone, combination tile bath. Facilities for dining and group parties. **UNderhill 3-2100**

HOTEL PITTSBURGHER MOTEL Opposite Greater Pittsburgh Airport. 56 air-conditioned rooms, tile bath, radio, TV, phone. Courtesy car to and from airport. **AMherst 4-5152**

KNOTT HOTELS

*Teletype Service. Telephone any Knott-Hotel. All Knott Hotels and offices in U.S. connected by teletype.

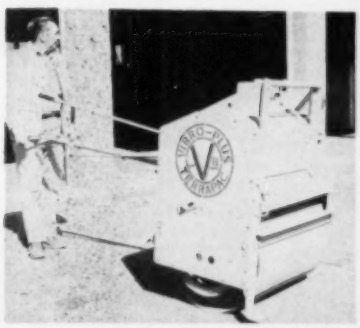
Joseph F. Duddy, General Manager

part owner, will continue in charge as active manager of the Phoenix corporation. He will also serve as manager, Western Division of the parent company.

• purchase of the Keystone Aerial Ladder Division from Delta-Star Electric Division of H. K. Porter Company, Philadelphia, Pa., has been announced by the **Mummert-Dixon Company,** Hanover, Pa. Keystone will continue to be the trade name of the Keystone Aerial Ladder Division of Mummert-Dixon.

• a newly formed corporation, **The Penn Meter Company,** 4110 Haverford Ave., Philadelphia 4, Pa., has purchased the entire facility formerly known as The Penn Instrument Division of Burgess-Manning Company. Engineering and manufacture of flow instruments and primary elements will be continued under the new ownership-management with W. E. Williams serving as president-sales manager.

• **American Meter Co.,** Philadelphia, Pa., will sell and service the complete line of positive displacement rotary meters made by **Roots-Connersville Blower Division,** Connersville, Ind., one of the Dresser Industries. These meters, to be designated as American Rotary Meters, will be supplied to the gas utility companies and others through American's regular channels in the United States and Canada.

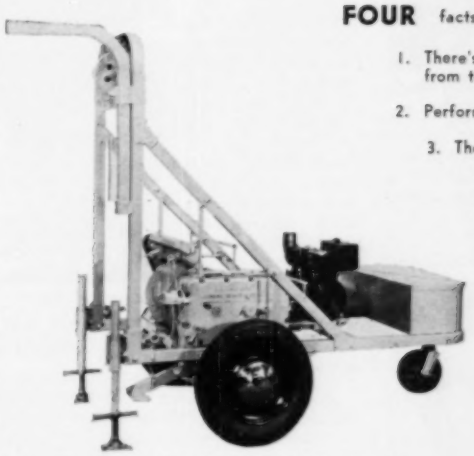


George Micklo, Superintendent of Public Works, Township of Franklin, Somerset County, N. J., demonstrates a vibrating roller manufactured by Vibro-Plus Products, Inc., Stanhope, N. J., which was purchased by the Township Council. The roller will be used for street and road repairs, settling ditches made as a result of water breaks and storm drainage works.

TURCO

MAXI-POWER Sewer Cleaning Unit

Note the STIFF LEGS—quickly adjustable to compensate for uneven ground.



Sewer Cleaning Brushes, Buckets, Ferrets, Flushing Bags, Rods, carried in stock for immediate delivery

ONE unit consists of:

TWO machines, located at the ends of the sewer section to be cleaned.

TWO models (501 and 502) each with 3-speed transmission, enable you to get the exact power and line speed you need:

	1st gear	2d gear	3rd gear
#501	11000 lbs.	9000 lbs.	7000 lbs.
#502	15000 lbs.	12000 lbs.	9000 lbs.

FOUR facts to consider:

1. There's a unit exactly right for any city, from the largest to the smallest.
2. Performance is easy, quick, thorough.
3. The original full flow of the sewer is restored.
4. Each part is designed and engineered for long life.

Write for catalog

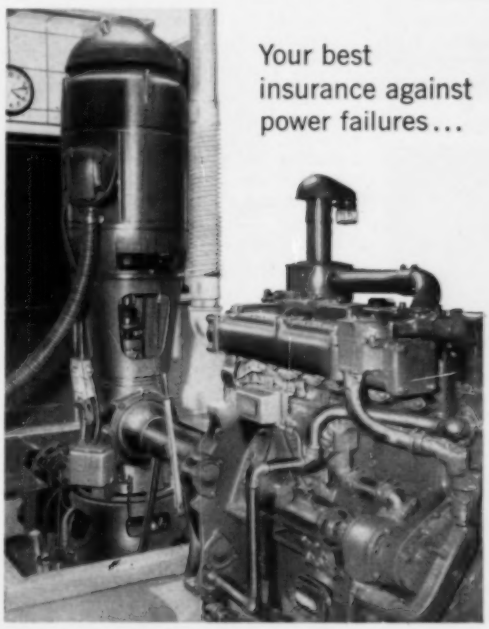
Turbine Sewer Machine Company

Division of

Chas. H. Stehling Co.

1303 North Fourth St.

Milwaukee 12, Wis.



Your best insurance against power failures...

JOHNSON

Right angle

GEAR DRIVES

With the Johnson Combination Drive shown here, either the vertical electric motor or horizontal engine can be used to drive your pump. Engine takes over if power fails; makes continuous supply of water available for domestic, industrial, or fire fighting use. Thousands in use.

Sizes: 15 to 500 hp. for all horizontal prime movers and any vertical shaft pump. Combination, dual, and standard types; hollow or solid shafts. Write now for engineering catalogs.

JOHNSON • MAKERS OF FINE GEARS SINCE 1904

GEAR & MANUFACTURING CO., LTD.

8TH AND PARKER STREETS • BERKELEY 10, CALIFORNIA

MEMBER OF AGMA

East and Gulf Coast representatives:

Smith Meeker Engineering Co., 157 Chambers St., New York City

12-R

ABOUT PEOPLE

Walter E. Schirmer has been elected executive vice president of **Clark Equipment Co.,** a post that has been vacant since George Spatta was elevated from this position to the presidency in 1945. Mr. Schirmer has been a vice president of Clark Equipment since 1947 and has been president of Clark Equipment International, C. A. since 1958. In his new position he will assist Mr. Spatta in overall management of the company, directing his efforts to both domestic and international operations.

W. E. Schirmer

The Purchasing Agents Association of North Jersey has elected as its president the first woman member of the National Association of Purchasing Agents ever to hold the office of president of an affiliated association, Miss Irene Gordon, chief purchasing agent of **Wallace & Tiernan Inc.,** Belleville, N. J., manufacturer of chemical feeding and metering equipment, precision pressure instruments, and cathodic protection systems for corrosion control.

Irene Gordon

Marvin Lane, general manager of **Graver Water Conditioning Co.,** a division of Union Tank Car Co., has been awarded the new title of president of that division by the Board of Directors of Union Tank Car Co. Mr. Lane has been general manager of Graver Water since November 1959. He joined Graver Water in 1949.

Marvin Lane

The Board of Directors of **The Colorado Fuel and Iron Corporation** has elected Leonard C. Rose as executive vice president and Rudolph Smith as executive vice president-operations, according to an announcement by Alwin F. Franz, president.

Caterpillar Tractor Co., Peoria, Ill., announces that, effective June 1, Vice President W. J. McBrian will succeed retiring Vice President Gail E. Spain, who has had administrative responsibility for foreign marketing, and will also become president of the subsidiary companies, Caterpillar Americas and Caterpillar of Delaware. Lee L. Morgan will succeed Vice President Henry H. Howard, retiring, as vice president in charge of the Engine Division. He also assumes administrative responsibility for the company's Defense Products Department. E. C. Chapman, assistant sales development manager, will succeed Lee Morgan as manager of Sales Development.

Charles W. Nichols, Jr., president of **Nichols Engineering & Research Corp.,** New York, N. Y., has announced the appointment of H. Bach Nielsen as assistant to the general manager of the firm. Mr. Nielsen was formerly manager of the company's Nerco-Niro Spray Dryer Division. In his new position he will have over-all supervision of the company's sales.

Bach Nielsen

Franklin L. Sommer recently rejoined **Simplex Valve and Meter Co.,** a division of Pfaudler Permutit Inc., Lancaster, Pa., as district sales manager for the Philadelphia area. His territory includes eastern Pennsylvania, southern New Jersey and Delaware. He also will be active in a supervisory capacity with relation to Pittsburgh, Pa., Huntington, W. Va.; and Washington, D. C. sales offices.

Three executive promotions at **Bailey Meter Co.,** Cleveland, Ohio, have been announced by P. S. Dickey, company president. H. H. Gorrie has been elected executive vice president; L. F. Richardson, vice president in charge of sales activities and a member of the Board of Directors; and J. H. Dennis, vice president in charge of all manufacturing activities and plants.

Thomas O. Carson, who has been regional manager-Central Region for **Rockwell Mfg. Co.,** has been named assistant vice president, Meter & Valve Division Sales. He will headquarter in Pittsburgh, Pa., and will be responsible for coordinating sales of all Meter and Valve division products east of the Mississippi River. D. H. Shoemaker, Pittsburgh district manager, has been named to succeed Mr. Carson.

Thomas Carson

D. Shoemaker

Jackson Kemper, executive vice-president of **Mueller Co.,** Decatur, Ill., has made known the appointment of Frank A. Speer as vice president and works manager. Mr. Speer will direct manufacturing operations for all Mueller Co. domestic facilities. He was formerly plant manager of the New Castle, Pa. plant of Chicago's Crane Co.

Frank Speer

According to word from William G. Hamilton, Jr., president of **American Meter Company, Inc.,** stockholders of the company voted to increase its Board of Directors to ten members, and elected Dante E. Broggi to fill the new post. Mr. Broggi is a vice president of the Buffalo, N. Y., headquartered company and has been active in its expansion and diversification program.

Dante Broggi

Henry C. Schwenk, manager-marketing for the **Henry Pratt Co.,** Chicago 7, Ill., has announced the appointment of Henry A. Porterfield as field sales manager. The Henry Pratt Co. manufactures rubber seat butterfly valves, rubber seat ball valves, automatic strainers, nuclear air locks, turbine-condenser expansion joints and special steel fabrications.

Henry Porterfield

A. C. Gossard was appointed by President Howard Hall to succeed recently retired Kenneth Lindsay, executive vice president of **Iowa Manufacturing Co.,** Cedar Rapids, Ia. He will be responsible for directing all domestic sales and advertising for the company.

Robert E. Toolan has been elected a vice president of **Wainright & Ramsey Inc.,** New York 5, N. Y., according to an announcement by J. B. Ramsey, president of the municipal financial consultant organization.

Ira S. Robbins, member of the **New York City Housing Authority,** was reappointed for a five-year term by Mayor

(Continued on page 262)

PLAN TO VISIT WITH US AT DETROIT—BOOTHS 21 to 23

AFTER HOURS WE WILL WELCOME YOU AT THE STATLER-HILTON

GAMON METER DIVISION

NEWARK — WORTHINGTON — NEW JERSEY

TRAFFIC ENGINEERING; PLANNING and OPERATIONAL

URBAN MASTER PLANNING

SUB-SOIL INVESTIGATIONS and FOUNDATION DESIGN

Planning, design and supervision of construction of

RAILROADS, MOTOR FREIGHT and TRANSIT FACILITIES

PIPE LINE TRANSPORTATION

SHOPPING and COMMERCIAL DEVELOPMENT PROJECTS

DRIVE-IN THEATRES

HIGHWAYS, BRIDGES and STREETS

MISSILE BASES and MILITARY STRUCTURES

DAMS, WATERWAYS and EARTHWORKS

SEWERAGE SYSTEMS

AIRPORTS

The Clarkeson Engineering Company, Inc. and John Clarkeson — Consulting Engineer

CLARKESON

skilled engineering meeting public needs

Dept. 23
285 Columbus Avenue,
Boston 16,
Massachusetts

We invite you to contact us for a comprehensive brochure, listing completed projects and case histories, and including our statement of experience and areas of specialization.

About People

(Continued from page 260)

Robert Wagner. Mr. Robbin's new term began May 1. He was originally appointed as a member of the Authority on May 1, 1958, when the agency was reorganized to provide for a full-time chairman and two full-time members who alternate annually as vice-chairman.

Arthur Sternberg has been appointed vice president and general manager of the Electrical Division, **Fairbanks, Morse & Co.,** headquartered at Freeport, Ill., it was announced by Thomas G. Lanphier, Jr., president of Fairbanks, Morse. He succeeds George H. Herrick, who will head up divisional headquarters sales of large electrical machinery at Beloit, Wis.

Arthur Sternberg

The appointment of Paul T. Talbott to the newly created position of assistant superintendent, Clay Division, was announced by E. L. Miller, president of **American Vitrified Products Co.,** Cleveland, Ohio.

Harry S. Jeske, manager of the **Koehring** southern plant at Chattanooga, Tenn., has been appointed president and general manager of Koehring's **Kwik-Mix Division,** Pt. Washington, Wis., according to an announcement by Julien R. Steelman, Koehring board chairman and president.

Harry Jeske

Hank Schrader has been appointed manager of municipal pump sales at **C. H. Wheeler** of Philadelphia, Pa. He's also in charge of the sale of pumps for public works projects and to branches of the Federal Government. He was formerly Southeastern District Sales Manager of the Pump Division.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. So., New York 16, N. Y.

TOWN MANAGER WANTED

Town of Wethersfield, Conn., suburb to state capital, Hartford; 20,000 population four-million dollar budget (including amount budgeted for education); 85 employees (exclusive of education department); has 9 man council; elections biennially. Some managerial experience necessary; salary open. Write: W. D. Birmingham, Town Clerk, 505 Silas Deane Highway, Wethersfield, Conn. Include photograph.

POSITION VACANT ASSISTANT CITY ENGINEER

The City of Chattanooga, Tennessee is accepting applications for the position of Assistant City Engineer with general knowledge of principles and practices of Civil Engineering related to municipal work; should be registered professional engineer or be able to obtain registration for the State of Tennessee. Salary start, $610. to $640.; range to $760. per month. Write Ellis L. Spencer, City Engineer, 204 City Hall, Chattanooga, Tennessee.

Business Administrator

TOWNSHIP OF BERKELEY HEIGHTS, NEW JERSEY AREA—6 SQUARE MILES

1960 POPULATION—8280 ULTIMATE —16,000

Applicants having training and experience in municipal management are invited to submit resumes. Salary will be commensurate with background, experience and previous compensation.

Please reply to W. C. Russo, Town Clerk, 29 Park Avenue, Berkeley Heights, New Jersey.

Municipal Salesman

Man with following to sell high commission supplies to highway departments in cities, towns and counties. Age not important. Write Box 131, The American City, 470 Park Ave. South, New York 16, N. Y.

OZONE GENERATORS

Manufacturers representatives & distributors wanted. Unique lease plan assures you high earnings with annuity, saving municipality to $370.00 monthly on lift station odor control. Specified by leading engineers. Exclusive territories.

INVEX, INC., Dept. AC, Box 1335, No. Miami 61, Florida.

The American City
Professional Service Directory

ALBRIGHT & FRIEL INC.
Consulting Engineers
Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates.
Three Penn Center Plaza
Philadelphia 2, Pa.

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

AURNHAMMER, JESKE & AURNHAMMER
Consulting Engineers
Water Supply & Treatment
Sewerage & Sewage Disposal
Industrial Waste Treatment
Storm Drainage & Flood Control
Municipal Planning & Development
Reports, Plans, Specifications & Construction Supervision
47 River Road — Summit, N. J.

JOHN J. BAFFA
Consulting Engineers
Drainage — Swimming Pools
Sewerage — Water Supply & Treatment
Sewage Treatment — Industrial Wastes
Refuse Disposal — Rate Studies
75 West St. — New York 6, N. Y.

SCOTT BAGBY
ROBERT CATLIN
Modern Comprehensive City and Area Planning and Development
"Plans Which Can Be Carried Out"
45 Broadway, Denville, N. J.
1500 Margaret S. E., Grand Rapids, Mich.

MICHAEL BAKER, JR., INC.
Consulting Engrs., Planners, Surveyors
Airport, Highway & Bridge Design; Water & Sewerage, Municipal Engrg.; Photo Mapping, City Planning, Urban Renewal & Redevelopment; Soils Lab; Complete Survey Service
Home Office: Rochester, Pa., Baker Bldg., Jackson Miss., Northview Dr., Charleston, W. Va., 19 Dunbar St., Harrisburg, Pa., 2799 N. Fourth St.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

ABBOTT & ADAMS INC.
Real Estate Appraisers & Consultants
Urban Renewal — Re-Use Appraisals — Economic Studies
Market Analysis — Marketabilty Programs — Redevelopment Studies
331 Madison Avenue, New York 17, N. Y. — MUrray Hill 7-1255

Abrams Aerial Survey Corporation
Over one-third century of Experience
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
Planimetric topographic maps and profiles. Large scale atlas sheets. Infra-red for forestry analysis.
606 E. SHIAWASSE STREET — LANSING 1, MICHIGAN

AERIAL SURVEYS, INC.
Maps and Aerial Photographs
For all Planning and Engineering Purposes
4614 Prospect Ave. — Cleveland 3, Ohio

EXPERIENCE COUNTS: Dependable Photo Maps, Topographic Maps, Tax Maps
AERO SERVICE CORPORATION
Oldest Flying Corporation in the World • Founded 1919
HEADQUARTERS: 210 E. Courtland St., PHILADELPHIA 20. OFFICES: 1401 S. Detroit St. TULSA; 34 Richard St., SALT LAKE CITY 10; 68 Post St., SAN FRANCISCO

WEED CONTROL PROGRAMS
AQUATIC • TERRESTRIAL • HIGHWAY • STREET
ALLIED BIOLOGICAL CONTROL CORP.
19 Milk Street, Boston 9, Mass. • HAncock 6-7009
Biological Surveys Made of Weed Infested Water Recreation Areas

ALSTER & ASSOCIATES, INC.
ENGINEERS
PHOTOGRAMMETRIC ENGINEERING •
TOPOGRAPHIC & PLANIMETRIC MAPS •
AERIAL MOSAICS • PRECISE FIELD SURVEYS
6135 Kansas Ave., N.E. • TA 9-1167 • Washington 11, D. C.

JACK AMMANN, INC.
Thirty years of experience to serve you!
TOPOGRAPHIC · PLANIMETRIC · PLAN-PROFILE · DIGITAL DATA
AERIAL PHOTOGRAPHY, COLOR · BLACK AND WHITE · MOSAICS
ENGINEERS and SURVEYORS
Broadway at Tenth, San Antonio 5, Texas

AMERICAN AIR SURVEYS, INC.
Aerial Topo Maps • Aerial Photos & Mosaics • Tax Maps
907 PENN AVE., PITTSBURGH 22, PA.
BRANCHES: MANHASSET, N. Y.—ATLANTA, GA.—A NATIONWIDE SERVICE

The American City Professional Service Directory

Municipal Tax Revaluations — Appraisals

ASSOCIATED SURVEYS

Real and Personal Property Tax Maps

29-31 Howe Ave., Passaic, N. J.
311 Bellemeade St., Greensboro, N. C.

B & B ENGINEERING CORPORATION
FIRE ALARM, TRAFFIC AND PROTECTIVE SIGNALING
MAIN OFFICE, NORWOOD, LOUISIANA
TELEPHONE, WILSON, LA., 46-J

JOHN J. BEHRENDS AND ASSOCIATES
Consulting Engineers
SPECIALIZING IN
TRAFFIC — PARKING — REPORTS — SURVEYS
801 SOUTH BLVD., OAK PARK, ILL. — ST. PETERSBURG, FLA.

BENHAM ENGINEERING COMPANY
and Affiliates
215 N.E. 23rd Street — Oklahoma City, Oklahoma

BLACK & VEATCH
Consulting Engineers
Water Supply, Water Purification, Electric Lighting, Power Plants, Sewerage, Sewage Disposal, Gas, Valuations, Special Investigations and Reports.
1500 Meadow Lake Parkway — Kansas City 14, Missouri

BROWN ENGINEERING COMPANY
Consulting Engineers
K. P. Building — Des Moines 9, Iowa

BUCHART-HORN
(BUCHART ENGINEERING)
55 S. Richland Ave., York, Pa.
920 Columbia Ave., Lancaster, Pa.

- Planning—Studies and Analyses—Reports—Design
- Municipal Sewer & Water Systems
- Commercial & Industrial Plants
- Subdivisions & Housing
- City Planning
- Highways & Bridges
- Schools & Parks
- Dams
- Airports

BUCK, SEIFERT AND JOST
Consulting Engineer
Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.
112 East 19th Street — New York 3, N. Y.

Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
S. F. Hatch
Raymond Fuller
Tehlman Krumm
R. E. Peters
Robert Wolfe

BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE — COLUMBUS 12, OHIO

Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

BANISTER ENGINEERING CO.
Consulting Engineers
Staffed to completely fill municipal requirements for professional services.
310 North Snelling Ave.
St. Paul 4, Minnesota
Tel. Midway 6-2612

E. D. BARSTOW
Sanitary Engineer
Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction
163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES
City Planners — Civil Engineers
Landscape Architects

317 N. 11th Street	St. Louis, Mo.
815-17th Street	Washington, D. C.
925 Bethel Street	Honolulu, H.
188 Jefferson Ave.	Memphis, Tenn.
120 Marietta St.	Atlanta, Ga.

HOWARD K. BELL
CONSULTING ENGINEERS, INC.
Water Works — Swimming Pools
Industrial Wastes — Garbage Disposal
Sewerage — Drainage
Valuations — Rates — Reports
Operation Supervision
553 S. Limestone St. Lexington, Ky.

Black, Crow and Eidsness, Inc.
Engineers
Water, Sewerage, Power, Recalcination, Hydrology, Valuation
Rate Studies
Gainesville, Fla. Boca Raton, Fla.

CLINTON BOGERT ENGINEERS
Consultants
Clinton L. Bogert — Ivan L. Bogert
Donald M. Dittmars — Robert A. Lincoln
Charles A. Manganaro — William Martin
Water & Sewage Works — Incinerators
Drainage — Flood Control
Highway and Bridges — Airfields
145 East 32nd St., New York 16, N. Y.

Bonham, Kuck, Grant and Brundage
H. E. Benham — Nye Grant
Carl E. Kuck — J. M. Brundage
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
4954-58 N. High St., Columbus 14, O.

LOUIS P. BOOZ
Consulting Engineer
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

Bowe, Albertson & Associates
Engineers
Sewage and Water Works
Industrial Wastes—Refuse Disposal—Municipal Projects
Industrial Buildings—Reports
Plans—Specifications and Operation—Valuations
Laboratory Service
75 West St., New York 6, N. Y.

Briley, Wild & Associates
Consulting Engineers
Reports Supervision
Designs Appraisals
Consultations
8 N. Wild Olive Avenue
Daytona Beach, Florida

BURGWIN & MARTIN
Consulting Engineers
Surveys, Reports, Design and Supervision
Bridges & Structures, Highways & Streets, Water Supply & Sewage Treatment, Dams, Foundations, Airfield, Traffic & Parking, Community Planning, Telephone Communications
408 W. Seventh St., Topeka, Kansas
115 E. Armour Blvd., Kansas City 11, Missouri
728 Delaware St., Denver 4, Colorado

FLOYD G. BROWNE AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory, Reports, Design, Supervision.
123 W. Church St., Marion, Ohio

RALPH H. BURKE, INC.
Complete Consulting Engineering and Architectural Services
Plans Construction Supervision Reports
Expressway Grade Separations Municipal Works
Underground Garages Parking Structures Traffic Studies
Airports and Air Terminals Buildings Parks Field Houses Shore Protection
Swimming Pools Marinas Artifical Ice Rinks
20 North Wacker Drive, Chicago 6, Ill.
506 Higgins Road, Park Ridge, Ill.

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Investigations, Reports, Designs, Supervision, Research, Development, Flood Control.
18 Tremont St., Boston 8, Mass.

BURNS & McDONNELL
ENGINEERS — ARCHITECTS — CONSULTANTS
4600 E. 63rd St. Trafficway
Kansas City 41, Missouri

CANDEUB, FLEISSIG & ASSOCIATES
Consulting Municipal Planners
Community Planning, Urban Renewal Studies, Regional Planning.
32 Green Street, Newark 2, New Jersey

HOMER L. CHASTAIN & ASSOCIATES
Consulting Engineers
Civil, Structural, Mechanical, Industrial Design & Supervision, Construction, Engineering, Turnpikes, Bridges, Water Supply, Sewerage, Flood Control & Drainage, Material Controls, Municipal Engineering, Topographic Surveys.
155½ WEST MAIN STREET
DECATUR, ILLINOIS

Capitol Engineering Corporation
Consulting Civil Engineers
Dillsburg, Pennsylvania, U.S.A.

Chicago Aerial Survey
10265 Franklin Ave.
Franklin Park, Ill.
GLadstone 1-0380
A Division of Chicago Aerial Industries, Inc.
Aerial photography since 1923. Complete photogrammetric services for city, county, highway and consulting engineers. Developers of Sonne Strip Photography.
PHOTOGRAMMETRIC ENGINEERS
- Base maps and atlas sheets.
- Precise topographic maps for sewerage studies, construction planning and site location.
- Scaled mosaics and pictorial presentations.
- Highway studies. Street and road maps, Sonne photography.

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste Treatment—Power Plant—Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
801 Suismon St.
Pittsburgh 12, Pa.

CLARK AERIAL SURVEY CORP.
Custom Service
Topographic Maps — Mosaics — Reconnaissance Strips — All Types of Aerial Photography
Frank T. Lodge II, President
45075 N. Territorial Rd.
GLenview 3-5430
Plymouth, Michigan

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

THE J. M. CLEMINSHAW COMPANY
"Our 38th Year"
APPRAISALS — REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
1601 BROOKPARK ROAD, CLEVELAND 9, OHIO

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion Smoke Control
38 Park Row, New York 38, N. Y.

CHAS. W. COLE & SON
Engineers and Architects
3600 E. Jefferson Blvd.
South Bend, Indiana
2112 W. Jefferson St.
Joliet, Illinois

CLARK, DAILY AND DIETZ
Consulting Engineers
Sewerage, Waterworks, Street Lighting, Highway, Swimming Pools, Surveying and Mapping, Land Development Studies, Bridges, Buildings, Foundations.
211 North Race St. Urbana, Illinois
188 Jefferson St. Memphis, Tennessee

REVALUATIONS
CLT
APPRAISALS
COLE • LAYER • TRUMBLE CO. / 11 W. MONUMENT AVE. • DAYTON 2, O.
Municipal Tax Revaluations / Illustrated Brochure on Request

C. C. COLLINGS & CO., Inc.
Financial Consultants
Specialists in Direct Obligation, Revenue & Municipal Authority Financing
Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

CONSOER, TOWNSEND & ASSOCIATES
Consulting Engineers
Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highways and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.
360 EAST GRAND AVENUE
CHICAGO 11, ILLINOIS

The American City Professional Service Directory

DAMON & FOSTER
Consulting Civil Engineers and Surveyors
Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning, Reports, Design, Supervision
Sharon Hill — Pennsylvania

DAY & ZIMMERMANN, INC.
CONSULTING ENGINEERS
INCINERATOR PLANTS — POWER PLANTS
VALUATIONS AND APPRAISALS — TRAFFIC AND TRANSIT
NEW YORK — PHILADELPHIA — CHICAGO

DE LEUW, CATHER & COMPANY
Consulting Engineers
Public Transit — Expressways — Urban Renewal — Railroad Facilities — Municipal Works
Traffic & Parking — Grade Separations — Subways — Industrial Plants — Port Development
150 North Wacker Drive, Chicago 6 — San Francisco — New York — Boston

DRAKETOWN®
PROPANE PLANTS
☆ *Standby* ☆ *Augmentation* *100% Town Supply*
DESIGN • ENGINEERING • CONSTRUCTION
DRAKE & TOWNSEND, INCORPORATED
11 WEST 42nd STREET — NEW YORK 36, N. Y.

EDWARDS AND KELCEY
Engineers and Consultants
Traffic — Transportation — Parking — Expressways — Airports — Public Works
Surveys — Reports — Design — Supervision
3 William Street, Newark 2, New Jersey
Boston — Providence — Salt Lake City — New York — Minneapolis

ETL
ELECTRICAL TESTING LABORATORIES, INC.
Electrical, Electronic, Environmental, Photometric and Chemical
Laboratories, Testing, Research, Inspection and Certification
In-Plant Acceptance and Witness Testing
Wire and Cable—Paper—Street Lighting Fixtures
Checking of Instruments and Apparatus
2 EAST END AVENUE, NEW YORK 21, N. Y.

EMPIRE GAS ENGINEERING CO. • *P. O. Box 1738. Atlanta 1, Georgia*
LP-gas peak shaving and stand-by plants for • municipalities • industry • design • construction

EWIN ENGINEERING CORPORATION
Engineers — Consultants
Municipal Planning—Highways—Urban Renewal—Public Transit—Sewage Systems—Water Systems—Bridges—Port and Harbor Development
Washington 16, D. C.—5104 MacArthur Boulevard, N. W.
150 Savannah Street, Mobile, Alabama — DuPont Plaza Center, Miami, Florida

36 YEARS OF CITY MAPPING EXPERIENCE
FAIRCHILD AERIAL SURVEYS
Large scale photomaps . . . detailed topographic mapping . . . automatic cross sectioning . . . planimetric maps . . . for all planning and engineering uses.
Los Angeles: 224 E. 11th Street • New York: 10 Rockefeller Plaza • Boston: New England Survey Service, Inc., 255 Atlantic Ave. • Houston: 5043 Stillbrooke Drive • Washington, D. C.: 1625 I Street N.W.

Crawford, Murphy & Tilly
Consulting Engineers
Water Works—Impounding Reservoirs
Highways — Municipal Streets — Expressways — Traffic Problems — Airports — Swimming Pools — Sewers
Sewage Treatment, Wastes Treatment—Storm Drainage—Flood Control
Surveys and Reports.
755 S. Grand Ave., W. Springfield, Ill.
LAKESIDE 8-5619

Fay, Spofford & Thorndike, Inc.
Engineers
Airports—Bridges—Express Highways
Port Developments Water Supply
Sewerage and Drainage Systems
Industrial Buildings — Incinerators
11 Beacon St.
Boston 8, Massachusetts

Finkbeiner, Pettis & Strout
Consulting Engineers
Water Supply, Water Treatment, Sewerage, Sewage Treatment, Bridges, Highways & Expressways.
2130 Madison Avenue, Toledo 2, Ohio

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

FRIDY-GAUKER-TRUSCOTT & FRIDY
Architects—Engineers
Water Supply & Treatment, Sewers & Waste Disposal, Incineration, Roads, Airports, Power & Lighting, Schools, Private & Municipal Buildings.
Reports, Plans, Supervision
1321 Arch Street, Philadelphia 7, Pa.

GEE & JENSON
Consulting Engineers, Inc.
Municipal Utilities & Services
Ports & Terminals
Airports & Industrial Planning
Feasibility Reports — Land Planning
Cocoa — Ft. Myers — Dunedin
117½ South Dixie, West Palm Beach, Florida

GREELEY & HANSEN
Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
14 East Jackson Blvd.
Chicago 4, Illinois

Haskins, Sharp & Ordelheide
Consulting Engineers
Water—Sewage & Industrial Wastes—Hydraulics
Reports, Design, Supervision of Construction, Appraisals, Valuations, Rate Studies
1009 Baltimore Ave., Kansas City 5, Mo.

HAVENS AND EMERSON
A. A. Burger — H. H. Moseley
J. W. Avery — F. S. Palocsay
E. S. Ordway — G. H. Abplanalp
A. M. Mock — S. H. Sutton
Water, Sewerage, Garbage, Industrial Water, Valuations—Laboratories
Leader Bldg. — Woolworth Bldg.
Cleveland 14, O. — New York 7, N. Y.

The American City Professional Service Directory

HAZEN AND SAWYER
Engineers
Richard Hazen Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
360 Lexington Ave., New York 17, N.Y.

ANGUS D. HENDERSON
Consulting Engineers
Angus D. Henderson, Thomas J. Casey
Water Supply and Sanitation
330 Winthop St., Westbury, N. Y.
210-07 29th Ave., Bayside, N. Y.

Harry Hendon & Associates, Inc.
Engineers
Civil Engineers — Public Utilities
Investigations — Designs
Supervision of Construction
P. O. Box 7404A 925 Sligh Blvd.
Birmingham 13, Ala. Orlando, Florida

HENNINGSON DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
2962 Harney St., Omaha 2, Nebraska

HILL and HILL
Engineers
Sewage and Waste Disposal,
Water Supply and Filtration
Dams, Reservoirs, Tunnels,
Airport and Topographic Survey
Home Office: 8 Gibson Street
North East, Pa.

Grand Junction, Colorado
P. O. Box 1915 - CH 3-1887
Holder Engineering Service
Civil Engineering Consultants
Specializing in Water Supply and Sewage Problems.
Moab, Utah, P. O. Box 562—AL 3-4126
Laramie, Wyoming
P.O. Box 284 - FR 5-6741

H. G. Holzmacher & Associates
Consulting Engineers
R. G. Holzmacher S. C. McLendon
Municipal Engineering
Water Supply & Treatment
Sewerage & Treatment
Water Analysis Laboratory
500 Broad Hollow Rd., Melville, N. Y.
66 West Marie St., Hicksville, N. Y.

C. H. HOPER & COMPANY
Utilities Engineers
Electric—Gas—Water—Sewer
Rates ● Financial and Economic Analyses ● Planning ● Feasibility Reports ● Valuations ● Organization and Management Studies
818 Seventeenth St. Denver 2, Colo.

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

Ford, Bacon & Davis
Design Engineers Reports
Construction Valuation
New York • Chicago • San Francisco • Monroe, La.

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewage, Industrial Wastes and Garbage Disposal, Highways, Bridges and Airports
Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENN.
Branch Offices
Pittsburgh, Pa. Daytona Beach, Florida Philadelphia, Pa.

GIBBS & HILLS, INC.
Industrial Wastes
Water & Sewage Works
Hydraulic Developments
Electric Transmission & Distribution Systems
Conventional & Nuclear Power Generation
Power Surveys & Contracts
Airports
Rapid Transit
Highways & Bridges
Pennsylvania Station, New York 1, N. Y.

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
Water Supply and Purification
Sewage Industrial Waste
Chemical Laboratory
New York READING, PA. Washington

HOWARD R. GREEN COMPANY ***Established 1913***
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
GREEN ENGINEERING BUILDING, CEDAR RAPIDS, IOWA

Charles W. Greengard Associates
consulting engineers
CHARLES W. GREENGARD ASSOCIATES
CIVIL • SANITARY • MUNICIPAL • UTILITY
Reports — Plans — Supervision — Appraisals
DEERFIELD ILLINOIS

GRIFFENHAGEN-KROEGER, INC.
Consultants in Public Management
Experienced in City Organization and Methods—Finance—Personnel Practices—Departmental Policies and Practices—Automatic Data Processing—Complete Personnel Testing Services
64 Pine Street, San Francisco
Other Offices: Los Angeles, New York, Washington, D. C., Chicago, Philadelphia

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on Sewage and Industrial Waste Treatment.
102 East Fairfax St. Falls Church, Va.

Hardesty & Hanover
Consulting Engineers
Bridges — Long Spans of All Types — Movable — Lift, Bascule and Swing — Hanover Skew Bascule — Steel and Concrete Spans — Grade Crossing Eliminations
Expressways and Thruways — Other Structures — Foundations — Supervision, Reports, Appraisals
101 Park Avenue New York 17, N. Y.

FREDERIC R. HARRIS, INC.

Consulting Engineers

Economic Reports, Feasibility Studies, Design, Supervision of Construction, Waterfront and Harbor Improvements—Water Supply—Sanitary and Industrial Waste Disposal—Highways Foundations—Soil Mechanics

144 East 44th Street
New York 17, N. Y.

1915 Tulane Avenue
New Orleans, Louisiana

HARRIS, HENRY and POTTER, INC.

Engineers—Architects

Water Supply, Sewerage Systems, Flood Control, Bridges, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations

Chester, Pa. Buckingham, Pa.

HARZA ENGINEERING COMPANY

Consulting Engineers

Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigations
River Basin Development

400 W. Madison Street Chicago 6, Ill.

HEATH

Survey Consultants, Inc.

Zero Laurel Ave.
Wellesley Hills 81, Mass.

GAS LEAKAGE CONTROL SURVEYS

- Provide SAFETY & a 3rd Party Audit
- Reduce unaccounted-for losses
- Assist in economical & effective maintenance-repairs
- Conserve & protect Natural Resources

HEMCO ENGINEERS

Sewerage & Wastes
Natural Gas
Municipal Services

Designers & Consultants

FALLS BUILDING MEMPHIS

Water Supply
Foundations
Bridges & Structures

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

Consulting Engineers

Bridges, Structures, Foundations, Express Highways, Administrative Services

1805 Grand Avenue
Kansas City 8, Mo.

99 Church Street
New York 7, N. Y.

HUNNICUTT & ASSOCIATES

433 FOURTH ST., NO.
ST. PETERSBURG, FLA.

COUNTY and MUNICIPAL

REVALUATION
ASSESSMENT MAPS
CONSULTANT SERVICE

OVER 30 YEARS' EXPERIENCE

Brochure on request

MARK HURD AERIAL SURVEYS, INC.

Aerial Photography Tax Maps

Topographic and Planimetric Maps

345 Pennsylvania Avenue South Minneapolis 26, Minnesota

WILLIAM T. INGRAM

Consulting Engineer

Water
Sewage
Refuse

Sanitary and Public Health Engineering
Planning—Design—Research

Industrial Wastes
Air Pollution Control
Industrial Health

Offices: East Coast
20 Point Crescent, Whitestone 57, N. Y.

West Coast
90 Panoramic Way, Walnut Creek, Calif.

International AERIAL MAPPING COMPANY
127 AIRPORT BLVD. ★ SAN ANTONIO 9, TEXAS
TAYLOR 6-0681

PRESENTS A MUNICIPAL PROGRAM
OF
AERIAL PHOTOGRAPHY-PHOTO ATLAS SHEETS
MOSAICS AND TOPOGRAPHIC MAPS
WRITE FOR FREE COPY

HORNER & SHIFRIN

Consulting Engineers

E. E. Bloss V. C. Lischer

Airports, Sewerage & Drainage, Hydrology, Sewage Treatment, Industrial Waste Treatment, Water Supply & Treatment, Paving, Structures, Industry Engineering Services

1221 Locust Street St. Louis 3, Mo.

Harold Hoskins & Associates

Consulting Engineers

Sewers and Sewage Treatment
Paving Water Supply Drainage
Bridges Airports Reports
Power Plants Surveys
Aerial Photogrammetry

1630 Que St. Lincoln, Nebr.
1018 8th Ave. Greeley, Colorado

ROBERT W. HUNT CO.

Engineers

Inspection — Tests — Consultation
Pipe and Appurtenances; Paving and Engineering Materials; Green and Treated Lumber

810 S. Clinton St., Chicago 7 and all large industrial centers.

Bring Your Professional Services to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Park Avenue South, New York 16

Jenkins, Merchant & Nankivil

Consulting Engineers

Municipal Improvements Gas Systems
Highways & Airports Water Systems
Power Development Sewerage Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Investigations and Reports

801-805 East Miller St.
Springfield, Ill.

THE JENNINGS-LAWRENCE CO.

Civil & Municipal Engineers

Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams Surveys—Mapping
Reports Plans—Supervision

1392 King Ave. Columbus 12, Ohio

Johnson & Anderson, Inc.

Engineers

Sewerage & Sewage Treatment
Water Supply & Distribution
Bridges—Highways
Municipal Engineering
Flood Control and Drainage

Home Office: Pontiac, Mich.
Branch Office: Warren, Mich.

Johnson Depp & Quisenberry

Consulting Engineers

Highways Water Supply
Airports Sewage Disposal
Bridges Surveys

2625 Frederica St., Owensboro, Ky.

JONES, HENRY & WILLIAMS

Consulting Sanitary Engineers

Water Works
Sewerage and Treatment
Waste Disposal

2000 West Central Ave.
Toledo 6, Ohio

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

The American City Professional Service Directory

Edward C. Jordan Co., Inc.
Civil and Sanitary Engineers
Sewerage • Sewage Disposal • Industrial Wastes • Drainage • Water Supply • Streets • Highways • Municipal Engineering Investigations—Reports—Designs—Supervision.
379½ Congress St., Portland, Maine
Tel. SP. 4031S

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures
Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILL.

Alfred Kaehrle Associates
Consulting Engineers
Highway Planning—Highway Design
Traffic Engineering Surveys
Parking Studies —Shopping Centers
10 North Main Street
West Hartford 7, Connecticut

KREHBIEL & KREHBIEL • engineers
Consulting
DRAINAGE PLANNING SEWERAGE WATER
HIGHWAYS POOLS SUBDIVISIONS
ICE RINKS REPORTS SURVEYS
1868 NIAGARA FALLS BOULEVARD • TONAWANDA, N. Y.

SANDERS A. KAHN ASSOC.
Real Estate—Planning
Urban renewal appraisals, marketability studies, shopping centers, industrial, terminals, aviation.
261 Madison Ave.
New York 17, New York
MUrray Hill 7-3363-4

KENNEDY ENGINEERS
COMPLETE PUBLIC WORKS ENGINEERING SERVICE
- WATER SUPPLY
- SEWAGE RECLAMATION
- SEWAGE AND WASTE TREATMENT

CHEMICAL AND BIOLOGICAL LABORATORY
San Francisco
Los Angeles
Tacoma
Salt Lake City

KAISER ENGINEERS
General Engineering Services
Public Works
300 Lakeside Drive
Oakland 12, Calif.
Phone: CRestview 1-2211

KUCERA AND ASSOCIATES, INC.
PHOTOGRAMMETRIC ENGINEERS • AERIAL PHOTOGRAPHY
CLEVELAND 24, OHIO • CHICAGO, ILLINOIS
City Mapping • Aerial Engineering Surveys • Tax Maps • Atlas Sheets • Photo Mosaics • Nationwide Service

JOHN J. KASSNER & CO
Consulting Engineers
John J. Kassner David Levine
Preliminary Studies, Designs, Contracts, Specifications, Highway, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning Housing, Parking, Parks.
6 Church St. New York 6, N. Y

KONSKI ENGINEERS
Parking Studies and Parking Structures
Bridges, Highways, Dams, Airports and Industrial Structures
Planning, Design and Supervision of Construction
206 E. Jefferson Street Syracuse 2, New York

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment, Garbage and Refuse Disposal and Incineration, Industrial Buildings.
TROY, N. Y.

The Kuljian Corporation
engineers • consultants
construction supervision
Designs • Surveys
Planning
1200 NORTH BROAD STREET, PHILADELPHIA 21, PA.
POWER PLANTS, AIRPORTS and AIRPORT FACILITIES
HIGHWAYS, EXPRESSWAYS,
WATER and SEWAGE WORKS,
FLOOD CONTROL, IRRIGATION
INDUSTRIAL PLANTS

Kirkham, Michael & Associates
Consulting Engineers
Complete Municipal & Industrial Services—Investigations, Reports, Design, Supervision of Construction, Rates. Water—Sewage & Wastes—Light & Power—Streets—Airports—Bridges & Structures.
Omaha • Rapid City • Fargo

KOEBIG and KOEBIG
ENGINEERING • ARCHITECTURE • MUNICIPAL PLANNING
Reports • Investigations • Designs • Consultants to Cities Since 1910
3242 W. 8th Street, Los Angeles 5, California
715 Bank of America Building, 625 Broadway, San Diego, California

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
7800 The Paseo
Kansas City 10, Mo.

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS
Studies — Reports — Designs — Supervision
Highways, Bridges, Site Planning, Industrial Buildings, Pipelines, Airports, Harbor Facilities, Traffic Analysis, Water Supply, Sewerage, Incinerators, Air Pollution, Seismic Investigations in addition to Aerial Photography, Cadastral Geodetic, Topographic and Photogrammetric Mapping.
Syosset, N. Y. Bogota, Columbia San Juan, P. R.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

METCALF & EDDY
Engineers
Soils, Foundations, Waterworks, Sewage Works, Drainage, Irrigation, Flood Control, Refuse, Industrial Wastes, Airports, Highways, Military Projects, Industrial and Commercial Facilities.
Statler Building, Boston 16, Mass.

The American City Professional Service Directory

PAN AMERICAN CONSULTANTS

Engineers and Planners

Airports—Highways—Expressways—Rapid Transit—Monorail
City & Regional Planning—Urban Renewal—Commercial & Industrial Structures
Hydrology—Hydraulics—Flood Control—Basin Development—Dams—"Sea Water Conversion"
Waterways—Harbors—Marinas—Offshore Structures
Investigations—Reports—Planning—Design

400 Montgomery St., San Francisco 4, Calif. YUkon 1-8979

NATIONAL TRAFFIC ANALYSTS

Serving Business, Industry and Governmental Agencies

SITE LOCATIONS • TRAFFIC COUNTING • PEDESTRIAN COUNTING • POPULATION ESTIMATES
CONSUMER SURVEYS • PRODUCTION COST ANALYSIS • QUALITY CONTROL ANALYSIS
CAPITAL FUNDS ANALYSIS • ORIGIN AND DESTINATIONS STUDIES FOR GOVERNMENTAL AGENCIES

1276 E. DELAVAN AVENUE, BUFFALO 15, NEW YORK TX 2-0021

NUSSBAUMER -- CLARKE and VELZY, INC.

CONSULTING ENGINEERS

SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS

327 Franklin St., Buffalo 2, N. Y. 500 Fifth Ave., New York, N. Y.

PARSONS, BRINCKERHOFF, QUADE & DOUGLAS

Engineers

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Canals,
Traffic, Parking and Transportation Reports, Power, Industrial Buildings,
Housing, Sewerage and Water Supply.

165 Broadway, New York 6, N. Y.

THE PITOMETER ASSOCIATES, INC.

Engineers

Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations

50 Church Street New York 7, N. Y.

RADER AND ASSOCIATES

Engineers-Architects

Water Supply Systems, Sewerage Systems, Waste Disposal,
Port Facilities, Harbors, Flood Control, Bridges, Tunnels,
Highways, Airports, Traffic, Foundations, Buildings, Reports,
Photogrammetry, Investigations, Consultations.

The First National Bank Building, Miami 32, Florida

WILLIAM RAISCH

CONSULTING ENGINEER

REPORTS AND DESIGNS

REFUSE INCINERATOR AND SEWAGE TREATMENT PLANTS
MUNICIPAL AND INDUSTRIAL SEWAGE AND WASTES DISPOSAL
SEWERAGE AND DRAINAGE

61 HILTON AVE. GARDEN CITY, L. I., N. Y.

RAYNOR AERIAL SURVEYS

Topographic Maps City Planning Tax Maps Field Surveys
Complete Photogrammetric Services

MAIN OFFICE: CHASE BUILDING, NEW FAIRFIELD, CONN.
District offices: West Sand Lake N. Y. and Plymouth, N. H.

THOMAS M. RIDDICK & ASSOCIATES

Consulting Engineers and Chemists

369 EAST 149th STREET
NEW YORK 55, N. Y.
MOtt Haven 5-2424

WATER PURIFICATION
SEWAGE TREATMENT
PLANT SUPERVISION
CORROSION CONTROL
INDUSTRIAL WASTE TREATMENT
STREAM POLLUTION INVESTIGATIONS

LABORATORIES FOR
CHEMICAL
BACTERIOLOGICAL AND
MICROSCOPIAL ANALYSES
OF WATER, SEWAGE AND
INDUSTRIAL WASTES

MORRIS KNOWLES Inc.

Engineers

Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

1312 Park Bldg.
Pittsburgh 22, Pa.

LADD ENGINEERING ASSOCIATES

Architects—Engineers
Municipal Public Works

FORT PAYNE ALABAMA

HAROLD M. LEWIS

Consulting Engineer, City Planner
Municipal & Regional Planning

Comprehensive and Master Plans
Zoning—Traffic and Parking Studies
Urban Renewal and Redevelopment
Reports—Plans—Ordinances

15 Park Row New York 38, N. Y.

Lorenzi, Dodds and Gunnill

Consulting Engineers

Serving Municipalities in Pennsylvania, Ohio, and West Virginia

1406 Berger Building
Pittsburgh 19, Pa.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Park Avenue South, New York 16

LOZIER CONSULTANTS, INC.

Engineers

Sewerage, Sewage Disposal
Water Supply, Water Purification
Refuse Disposal

10 Gibbs St., Rochester 4, N. Y.

Lublin, McGaughy & Assoc.

Architects and Consulting Engineers

Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreation facilities, reports and appraisals.

220 W. Freemason St., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D. C.

McCLAVE & McCLAVE

Civil & Consulting Engineers

Established 1906

Municipal Problems, Surveys, Reports, Design, Supervision, Industrial Waste, Sewerage and Water Supply
Flood Control, Highways, Land Development

Cliffside Park, New Jersey
Tel. Cliffside 6-4000

CITY DEPARTMENTS

can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

The American City Professional Service Directory

McNamee, Porter and Seeley
Consulting Civil Engineers
Water Supply and Treatment
Sewerage and Sewage Treatment
Waste Disposal
2223 Packard Road
Ann Arbor, Michigan

Louis C. Ripa & Associates, Ltd.
Designers—Engineers
Planners—Surveyors
184 S. Livingston Ave., Livingston, N. J.

DESIGN, INVESTIGATION, REPORTS, PARKS, RECREATION AREAS, HIGHWAYS, EXPRESSWAYS, OFFICE AND COMMERCIAL BUILDINGS, RESIDENTIAL SUBDIVISIONS, TRAFFIC STUDIES, GEODETIC, GEODIMETER, TOPOGRAPHIC SURVEYS, SITE PLANNING, SHOPPING CENTERS

GEORGE B. MEBUS, INC.
Consulting Engineers
Water Supply, Sewage Treatment
Industrial Waste Treatment
Broad Street Trust Bldg.
Glenside, Pa.

ROBERT AND COMPANY ASSOCIATES

Water Supply
Sewage Disposal
Industrial Wastes

Engineering Division
ATLANTA

Incinerators
Power Plants
Valuations

CHANGED YOUR ADDRESS?
If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street
St. Louis 2, Mo.
Municipal Airport
Daytona Beach, Fla.

DONALD M. OAKES
Public Management Consultant
2518 Foster
Grand Rapids 5, Michigan

SANBORN MAP CO., INC. (Est. 1876)
Dept. SP, Pelham, New York, Pelham 8-1649
NEW NATIONWIDE MAPPING, FIELD, AND ANALYTICAL SERVICES
ALL TYPES BASE MAPS — CUSTOM DESIGNED SERVICES FOR
PLANNERS, ASSESSORS, PUBLIC UTILITIES, MARKET ANALYSTS, ENGINEERS
Atlanta
New York
Chicago
San Francisco

O'BRIEN & GERE
Consulting Engineers
Water Supply, Treatment and Distribution
Sewerage and Sewage Treatment
Industrial Waste Treatment—Flood Control and Drainage
Rate Studies—Development Planning—Surveys
400 East Genesee St., Syracuse 2, N. Y.

IRBY SEAY COMPANY
Consulting Engineers
WATER SUPPLY & TREATMENT
ELECTRICAL
SEWAGE SYSTEMS & TREATMENT
NATURAL GAS
Goodwyn Institute Bldg. MEMPHIS 3, TENNESSEE Jackson 7-3301

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Bridges, Concrete, Steel, Welding, Foundations, Stadiums, APPRAISALS and REVALUATIONS for tax equalization
101 Park Avenue
New York 17, N. Y.

Malcom Pirnie Engineers
Malcolm Pirnie, Carl A. Arenander
E. W. Whitlock, Malcolm Pirnie, Jr.
Robert D. Mitchell, Alfred C. Leonard
MUNICIPAL AND INDUSTRIAL
Water Supply—Water Treatment
Sewage and Waste Treatment
Drainage—Rates—Refuse Disposal
25 W. 43rd St. New York 36, N. Y.
3013 Horatio Street, Tampa 9, Fla.

SERVIS, VAN DOREN & HAZARD
Engineers-Architects
Investigations • Design • Supervision of Construction • Appraisals
Water • Sewage • Streets • Expressways • Highways • Bridges • Foundations
Airports • Flood Control • Drainage • Aerial Surveys • Site Planning
Urban Subdivisions • Industrial Facilities • Electrical • Mechanical
2910 Topeka Blvd.
Topeka, Kans.

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
50 Church Street, New York 7, N. Y.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

STANLEY ENGINEERING COMPANY
Consulting Engineers
Hershey Building, Muscatine, Ia.
208 S. LaSalle St., Chicago 4, Ill.

The American City Professional Service Directory

PRAEGER-KAVANAGH
Engineers
126 E. 38th St., New York 16, N. Y.

HAROLD S. PRESCOTT
Consulting Civil Engineer
Design—Supervision
Water Supply—Sewerage—Dams
Subdivision & Industrial Development
594 Main St. Placerville, Calif.

Charles C. Redman, Jr.
Engineers & Surveyors
Complete Municipal Engineering, Surveying, Mapping and Planning Services.
P. O. Box 62 Kennett, Missouri
210 Monroe Jefferson City, Missouri

ARTHUR E. ROWE & ASSOCIATES
Municipal Buildings, Swimming Pools, Parking Facilities, Incinerators, Stadia, etc.
3115 Prospects Ave., Cleveland 15, O.

ROBERT H. STELLWAGEN
Consulting Engineers
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
1442 E. Outer Drive Detroit 34, Mich.

Schmidt Engineering Co., Inc.
Consulting Engineers
Reports, Design, Construction Supervision, Heavy Construction Project, Dams, Hydroelectric, Wate and Sewerage Works
Foundation Exploration and Treatment
100 East 10th St., Chattanooga 2, Tenn.

STETSON, STRAUSS & DRESSELHAUS, INC.
Civil & Consulting Engineers
Los Angeles Oceanside Porterville
Investigations, Reports, Designs, Estimates
Water Supply, Drainage, Sewerage, Municipal Works, Foundations, Materials Testing, Surveying & Mapping
Main Office: 215 W. 7th St., Los Angeles 14, California

CARL SCHNEIDER
Consulting Engineers
602 Pan American Bldg.
New Orleans 12, La.
Incineration Sanitary Fills
Refuse Collection Sanitation Studies
Reports

ALDEN E. STILSON & ASSOCIATES, LIMITED
Consulting Engineers
Water Supply, Sewerage, Industrial Wastes, Bridges, Highways, Industrial and Power Plant Layout, Materials Handling, Process Layouts, Studies, Surveys and Reports.
245 North High St., Columbus 15 Ohio 75 Public Square, Cleveland 13, Ohio

JOSEPH A. SCHUDT AND ASSOCIATES
Civil Engineers—Surveyors
Surveying, Land Planning Complete Municipal Services
Specializing in Subdivision Development
2451 Western Ave., Park Forest, Illinois

TIGHE & BOND
CONSULTING ENGINEERS
BOWERS AND PEQUOT STREETS
HOLYOKE, MASSACHUSETTS
TEL. JEfferson 3-3991
CIVIL, SANITARY AND ELECTRICAL ENGINEERING
INVESTIGATIONS, REPORTS, PLANS AND SPECIFICATIONS
SUPERVISION OF CONSTRUCTION AND OPERATION

SCRUGGS & HAMMOND
Specializing in small city Planning and Zoning, Landscape Architecture, Parks, Schools, Subdivisions.
330 Central National Bank Bldg.
Peoria, Ill.
New Circle Road, Lexington, Kentucky

TOLEDO TESTING LABORATORY
Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests
1810 North 12th Street Toledo 2, Ohio

Ladislas Segoe & Associates
City Planners—Consulting Engineers
Comprehensive City, County and Regional Plans ● Zoning Plans and Ordinances ● Traffic and Parking Studies ● Shopping Centers and Industrial Parks ● Urban Redevelopment and Renewal Projects.
811 Gwynne Bldg., Cincinnati 2, Ohio

Traffic-wise Process Co.
520 Fifth Ave. New York 36, N. Y.
Methods for progressing heavy traffic in small block cities. Primary-secondary coordination with high conducting power. Systematic coordination between highway and street traffic.
John K. Masten, Consultant, Pats. 3,926,332—3,926,333.

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

ARNOLD H. VOLLMER ASSOCIATES
Consulting Engineers
Parks — Playgrounds — Pools
Water Supply — Sewerage — Waste Disposal — Air Pollution
Traffic and Parking
25 West 45th Street
Boston New York Louisville

John R. Snell
ENGINEERS
Inc. 221 N. Cedar ● Lansing, Mich. ● IV 4-9493
Water and Sewage ● Industrial Wastes ● Refuse Disposal ● Highways and Streets ● Airports and Harbors ● Bridges and Structures ● Soils and Foundations ● Urban Planning ● Research and Development

CONSULTING ENGINEERS
not already represented in this directory can secure rates for these cards and further particulars of our service by writing to—
Advertising Department
THE AMERICAN CITY
470 Park Avenue South New York 16, N. Y.

SOIL TESTING SERVICES, Inc.
Consulting Engineers
John P. Gnaedinger Carl A. Mota
Soil Investigation, Engineering Reports, Inspection, Foundation Design.
1827 N. Harlem Ave., Chicago 35, Ill.
San Francisco; Kenilworth, N. J.; Havana, Cuba; Milwaukee, Wis.; Portland, Mich.

The American City
Professional Service Directory

SOUTHERN MAPPING & ENGINEERING CO.
Consulting Civil Engineers
Planners and Surveyors; Airports and Highway Design; Water Works and Sewage Design; Topography; Tax Mapping Reports and Investigations; Pipe Line Surveys, Acquisition of Right of Way.
216½ Commerce Place, Greensboro, N. C.

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply, Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision
620 Court St., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

J. B. WILSON
521 K. of P. Bldg.
Indianapolis 4, Indiana
Sewers, Sewage Treatment.
Waterworks, Water Treatment.
Gas Systems

James O. Yarger and Associates
Personnel & Management Services
Administrative and Fiscal Surveys ● Position Classification and Salary Plans ● Retirement Systems ● Personnel Ordinances & Regulations
An experienced senior staff for your use
300 Walnut St., Falls Church, Virginia

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
3338 North Illinois Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

WILSEY, HAM & BLAIR
Engineers and Planners
Water and Sewage Works
Flood Control and Drainage
Airports, Traffic Studies and Bridges
City and Regional Planning
Utilities Rate & Valuation Studies
800 W. Colorado Blvd. Los Angeles 41
111 Rollins Road, Millbrae, California

WILSON ENGINEERING CO.
Consultants
Highways Streets Sewers
Drainage Sub-division
South Public Square,
Glasgow, Ky.

J. C. ZIMMERMAN ENGINEERING CO.
Consulting Engineers
Water Supply and Treatment
Drainage—Flood Relief
Sewerage and Sewage Treatment
Planning Design Supervision
11121 West Oklahoma Avenue
West Allis 19, Wisconsin

OSCAR SUTERMEISTER
City Planning Consultant
City and Regional Comprehensive Plans —Planning, Zoning, Subdivision and Housing Laws—Protective Covenants—Industrial Park Design—Performance Standards—Traffic—Urban Defense.
5923 Johnson Ave., Bethesda, Md.
Washington 14, D. C.

WAINWRIGHT & RAMSEY
Inc.
Consultants on Municipal Finance
70 Pine Street — New York 5, N. Y.

TIPPETTS-ABBETT-McCARTHY-STRATTON
Engineers and Architects
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Designs, Supervision, Consultations.
375 Park Ave. New York 22, N. Y.

J. STEPHEN WATKINS
J. S. WATKINS — CONSULTING ENGINEERS — G. B. WATKINS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highway and Structures, Reports, Investigations and Rate Structures
Main Office:
416 East High Street, Lexington, Kentucky
Branch Offices:
5402 Preston Highway, Louisville, Kentucky
107 Hale Street, Charleston, W. Va.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

LEONARD S. WEGMAN CO.
Consulting Engineers
Refuse Disposal, Water Supply, Sewage Collection & Treatment, Highways, Bridges, Special Structures, Shore Erosion & Waterfront Works
235 East 45th Street — New York 17, N. Y.

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations
Supervisor of Purification Plants
14 Beacon St. Boston, Mass.

ROY F. WESTON, INC.
Engineers — Biologists — Chemists
Industrial Wastes — Stream Pollution — Air Pollution — Water-Sewage
Surveys—Research—Development—Process-Engineering—Plans and Specifications—Operation Supervision—Analyses—Evaluations and Reports
NEWTON SQUARE, PA.

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. Boston, Mass.

WALTER H. WHEELER
Consulting Engineers
Design supervision of Construction, Bridges, Buildings, Parking Garages, Foundations, Coffer Dams, Grain Elevators, Flat Slabs with grillage caps, Special Structures.
802 Metropolitan Building — Minneapolis 1, Minnesota

WHITMAN, REQUARDT AND ASSOCIATES
Engineers
Baltimore 2, Md.

GEORGE WIGHT
Consulting Engineers
446 East Main Street
Barrington, Illinois
25 South Washington
Naperville, Illinois

WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
760 W. Peachtree St., N.W.
Atlanta 8, Ga.

WILSON & COMPANY
Engineers & Architects
Water, Sewerage, Streets, Highways, Dams, Bridges, Electrical, Airfields
Chemical Testing Lab—Aerial Mapping—Electrical Computer Services
SALINA, KANSAS — WICHITA, KANSAS

EDDY New Improved Products Meet Modern Needs

EDDY Fire Hydrant

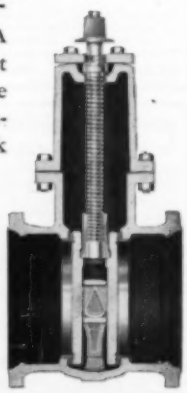
- Improved, streamlined, modernized
- Optional break-flange
- Large diameter barrel
- New self-sealing main valve packing
- Requires no lubrication
- Opens *with* pressure
- Closes *against* pressure
- Underwriters' listed
- Standardized, interchangeable parts

EDDY Check Valves

Completely new designs of horizontal swing check valves are available in sizes from 4 through 12 inches. They operate dependably in either vertical or horizontal positions and incorporate construction features which provide unusual flexibility of operation. These valves may be converted in the field from plain to single- or double-lever operation to meet changing requirements. Other check valves up to 24 inches.

EDDY Gate Valves

In addition to the regular line of EDDY Taper Seat AWWA gate valves, EDDY now offers a newly designed parallel seat AWWA gate valve in sizes through 12 inches. This valve has been specifically engineered to provide long, trouble-free service. Working parts are designed with heavy, thick section and large seating surfaces for dependable operation and improved wearing qualities. The valve has two-point, free-floating wedging for minimum friction and maximum operating ease. Other AWWA gate valves are available through 48 inches.



Whatever your waterworks requirements, it will pay you to have full information on the complete EDDY *line of valves and hydrants.*

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD NEW YORK

Index to Advertisers

Professional Service Directory, 263-273

Aeroil Products Co., Inc. 245
Alabama Pipe Co. 217
Allis-Chalmers 39-44, 251
Allis-Chalmers Hydraulic Div. 58, 59
American Bitumuls & Asphalt Co. 176
American Cast Iron Pipe Co. 24
American Cynamid Co. 95
American Marietta Co. 228
American Pipe & Construction Co. . . . 66
American Steel & Wire Div., United States Steel 83-86
Anchor Post Products, Inc., Fence Div. 253
Anthracite Equipment Corp. 234
Armco Steel Corp. 208
Arrow Mfg. Co. 229
Asplundh Chipper Co. 89
Austin-Western 50, 51
Automatic Voting Machine, Div. of Rockwell Mfg. Co. 230

Barlett Tree Expert Co., F. A. 45
Baughman Mfg. Co. 234
B- I- F Industries, Inc. 4
Buckner Mfg. Co., Inc. 234
Buffalo Meter Co. 53
Buffalo Pipe & Foundry Corp. 247
Buffalo Turbine Agricultural Equipt. Co., Inc. 177
Burroughs Corp. 277
Byron Jackson Pumps, Inc. 164

Cardinal Products Co. 253
Case Co., J. I. 206
Cast Iron Pipe Research Association 168, 169
Catalytic Combustion Corp. 82
Cataphote Corp. 136
Caterpillar Tractor Co. 18, 276
Chain Belt Co. 190
Chase Manhattan Bank 20, 21
Chevrolet Motor Div. 16, 17
Chicago Bridge & Iron Co. 56, 57
City Tank Corp. 78
Clark Equipment Co., Constr. Mach Div. 278
Clarkeson Engineering Co. 262
Clow & Sons, James B. 14, 15
Cole Layer Trumble Co. 254
Cole Mfg. Co., R. D. 244
Columbia-Southern Chemicals Corp., Pittsburgh Plate Glass Co., Chemical Div. 23
Combustion Engineering 76, 77
Computer-Measurements Corp. 227
Cone, Frederick & Co. 246
Cyclone Fence Dept. 83-86

Darley & Co., W.S. 253
Deere Industrial Div. 68, 69
Dempster Brothers, Inc. 8, 9
Diamond Crystal Salt Co. 178
Die Embossed Sign Mfrs. 73
Dixon Crucible Co., Joseph 64
Dolge Company, C. B. 248
Dresser Mfg. Div. 232
Drott Mfg. Corp. 97
Duncan Parking Meter Corp. 141

Eddy Valve Co. 274
Ellis Distributing Co. 256
Ellis & Ford Mfg. Co. 177
Essick Mfg. Co. 242
Etnyre & Co., E. D. 249
Expanding Sewer Machine Co. 248

Fairbanks, Morse & Co. 22
Fischer Industries 205
Fitchburg Engineering Corp. 216
Flexible, Inc. 160
Flex-O-Lite Mfg. Corp. 133
Ford Motor Co. 134, 135
Ford Motor Co., Tractor and Implement Div. 60
Forney's Inc. 241
Foxboro Co. 170
Franklin Worsted Co. 218

Galion Iron Works & Mfg. Co. 92, 93
Gamewell Co. 32
Gamon Meter Div. 261
Gar Wood Industries 204
General Electric Co., Industrial Sales Operation 198
General Filter Co. 231
Goldak Co. 258
Golden-Anderson Valve Specialty Co. 255
Good Roads Machinery Corp. 248
Gopher Stamp and Die Co. 73
Gorman-Rupp Co. 212
Gravely Tractors, Inc. 244
Griffin Wheel Co. 88
Grimm Stamp and Die Co. 73

Halliburton Co. 145
Harley-Davidson Motor Co. 46
Hercules Powder Co. 138
Hersey-Sparling Meter Co. 91
Holan Corp. J. H. 90
Holophane Co., Inc. 158
Homelite Corp. 194, 195
Hough Company, Frank G. 223
Howard Rotavator Co. 6
Hydro E-Z Pack Div. 226

Igloo Corp. 240
Illinois Stoker Co. 243
Indiana Gunite & Construction Co., Inc. 235
Industrial Blow Pipe Co. 250
Infilco Incorporated 192
International Business Machines 172
International Harvester Co. 97
Irving Subway Grating Co., Inc. 233

Johns-Manville 79, 201
Johnson Co., E. F. 230
Johnson Gear & Mfg. Co. 259
Joslyn Mfg. & Supply Co. 54

Keasbey & Mattison Co. 131, 132
Kennedy Valve Mfg. Co. 171
Kiekhaefer Corp. 182
Kohler Co. 257

Lake Shore Markers, Inc. 250
Layne & Bowler, Inc. 37
Lock Joint Pipe Co. 30
Lyle Signs, Inc. 73, 163

M & H Valve & Fittings Co. 63
Mack Trucks, Inc. 152
Magline, Inc. 240
Massey-Ferguson, Inc. 10, 11, 13
Mi-Co Meters 38
Millerbernd Mfg. Co. 162
Minneapolis-Honeywell, Heiland Div. 148, 149
Minnesota Mining & Mfg. Co. 34, 35
Miro-Flex Co., Inc. 73, 155
Morse Boulger, Inc. 177
Meuller Co. 2, 156
Multiplex Mfg. Co., Inc. 187

NSE Signs and Stampings 73
National Cash Register Co. 224
National Chemsearch Corp. 48
National Clay Pipe Mfg. Co., Inc. 55
National Plastic Products Co. 246
National Recorders, The 96
Nationwide Traffic Engineering 249
Neenah Foundry Co. 239
Neptune Meter Co. 98
Newark Brush Co. 67, 238
Northern Gravel Co. 244

O'Brien Mfg. Co. 215
Onan Div., Studebaker Packard Corp. . 71
Opelika Foundry Co. 256

Palmer Filter Equipment Co. 202
Parcoa Div. of Johnson Fare Box Co. . 238
Parsons Company 219
Pfaff & Kendall 150
Phelps Dodge Refining Corp. 225
Pittsburgh-Des Moines Steel Co. 65
Pittsburgher Hotel 258
Pittsburgh Plate Glass Co., Chemical Div., Columbia-Southern Chemical Corp. 23
Preload Co., Inc. 193
Price Brothers 166
Prismo Safety Corp. 161

Radiator Specialty Co. 254
Rainy Sprinkler Sales 220
Recordak Corp. 180, 181
Revere Electric Mfg. Co. 154
Reynolds Metals Co. 252
Roberts Filter Mfg. Co. 196
Rockwell Mfg. Co. 74, 75
Rolatape, Inc. 256
Roof Mfg. Co. 246
Rosco Mfg. Co. 193
Rust-Oleum Corp. 80, 81

Sanfax Co. 72
Seal Press, Inc. 191
Standard Steel Works, Inc. 209
Steel Plate Fabricators Assoc. 221
Sylvania Electric Products Inc. 146

Tarrant Mfg. Co. 244
Tennant Co., G. H. 157
Tennessee Corp. 96
Todd Shipyards Corp. 203
Trailevator Div., Magline, Inc. 240
Trojan Mfg. Co. 240
Turbine Sewer Machine Co. 259

Unimasco, Inc. 203
Union Metal Mfg. Co. 142
United States Pipe & Foundry 26, 27

Vermeer Mfg. Co. 220
Volkswagen of America, Inc. 188

Wallace & Tiernan Inc. 183
Waukesha Motor Co. 184
Wausau Iron Works 246
Wayne Mfg. Co. 29, 175
Wells & Associates, J. H. 241
Wilco Machine Works, Inc. 241
Willys Motors, Inc. 211
Wisconsin Motor Corp. 197
Wood Co., John, Air Pollution Control Division 186
Wood Brothers Mfg. Co. 218
Wood Co., R. D. 236
Woodward Iron Co. 94
Worthington Corp. 261
Wyco International 230

York Corp. 174

WHY IT COSTS LESS TO OWN A CAT GRADER

Most motor graders *look* pretty much alike, no matter who makes them. They handle similar jobs, too, and it isn't always easy to *see* any big difference in the way they handle them. In fact, the manufacturer's suggested prices usually are not greatly different for machines of nearly equal specifications—regardless of the "deal" that may be offered a buyer. But *used* motor graders vary considerably in price. Why?

The Buyer Determines Price

A used machine is priced at what the buyer is willing to pay . . . it's a measure of what *he* thinks is left in a machine. So, with used equipment, the buyer sets the price. This is clearly demonstrated at used equipment auctions. A check of auction prices throughout the country shows, for example, that the Cat No. 12 Motor Grader brings substantially higher prices than comparable machines of other makes—as much as 80% more. (Only machines of the same age, same condition and with similar attachments were compared.) What makes a Cat Motor Grader more desirable than other makes?

A Feature That Affects Cost

Any machine is desirable if it is known to be dependable. This reputation can only be the result of true quality design and quality construction. The Cat oil clutch is a good example. It was designed and is built to give long, trouble-free life. But, how well does it do it? Let's examine the records of just one Caterpillar Dealer who has 161 oil clutch-equipped motor graders in his territory. His records show that in four years he has sold only $24.38 worth of parts for motor grader oil clutches! One machine in his territory went 2524 service meter hours without any work on the clutch. Many users report 2000 hours of service before the first adjustment. In 1000 hours of operation only about .0025 inch of wear can be expected—less than the thickness of a human hair. And, since all parts are constantly bathed in oil there is no need for lubrication maintenance. Less wear, less attention mean not only lower total repair costs but more time on the job . . . less down time. Of course, the oil clutch is just one example of many quality features in Cat Graders.

A Look at Total Cost Records

The cost records of private owners and governmental bodies show which machines cost less. For example, an Indiana county keeps individual cost records on their six motor graders, 14 trucks, three loaders and five tractors. Their records showed that a year-old No. 12 needed only a set of head gaskets and two spark plugs with $25 labor, while two newer graders of another make needed major engine repairs, new clutches and side shift linkage. One town in New Hampshire reports that in over 20,000 hours, their No. 12 has never had a breakdown that held up work more than three hours. Operating costs—24¢ per hour exclusive of fuel, oil and operator. Comparing a Cat No. 12 to another make (after 3½ years' service), the records of an Arkansas county showed a saving of $2478.57 in parts and labor for their No. 12.

What's in It for You

Others have proved that Cat Motor Graders cost less in the long run because they are built better in the beginning. Your Caterpillar Dealer has additional facts and figures on low-cost operation of Cat Graders in your area. Ask him for free Cost Record Books so that you can keep individual machine records on your equipment. Prove to yourself that it costs less to own a Cat Grader.

Caterpillar Tractor Co.,
General Offices, Peoria, Ill., U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

A switch to Burroughs multiple printing accounting machines results in 25% less equipment—50% greater billing capacity

The scene: Suburban Water Systems, La Puente, California. The job: Billing for 54,000 customers. The equipment: 3 Burroughs F 5200 Multiple Printing Accounting Machines. The results, according to Office Manager C. W. Plemons: "When our 4 previous billing machines reached their capacity, we switched to 3 Burroughs Multiple Printers. Even though this is 25% less equipment, it still gets all of our billing out faster. In addition, it has lowered our operating costs and given us extra office space and equipment capacity for future expansion. With these machines billing never lags behind meter readings even during our busiest cycle."

C. W. Plemons, Office Manager

Burroughs—TM

Join the many successful municipal utilities helped to new accounting efficiency by Burroughs Corporation. Whatever your problem, we offer you the experience and capabilities in systems analysis to solve it. And we have the equipment, from adding machines to electronic computer systems, to make the solution work. Call our nearby branch now. Or write Burroughs Corporation, Detroit 32, Michigan.

Burroughs Corporation

"NEW DIMENSIONS / in electronics and data processing systems"

Year-round work-horse

Community of 28,000 finds veteran Michigan handles "nearly every job that comes up"

A Story of Savings

By Robert F. Erwin

Manager

Falls Township

Bucks County, Pa.

Our Model 75A Michigan is not just another piece of equipment to be put to bed for the winter.

After the weather gets too cold for construction, this unit continues to work.

It is used in some way on nearly every job that comes up . . . giving us versatility, economy and good performance on all of them.

Our township includes most of Levittown, Fairless Hills, and U. S. Steel's Fairless Works. 27.4 square miles. 28,854 people. 7,152 homes. 70 miles of streets. A Public Works budget in 1961 of $801,068.

Replaces crane, labor crew to clean muddy ditch

One of our toughest jobs—and perhaps the Michigan's most unusual assignment—is cleaning a 4-mile-long drainage ditch. Previously we used hand labor and a rented crane. Now the Michigan Tractor Shovel drives right into the wet, muddy, often soft-bottomed ditch . . . mucks it out . . . then truck-loads the waste material.

Plows more snow than truck with 2-man crew

Another valuable Michigan assignment is snow plowing. Heavy snow particularly. Last winter we faced drifts higher than the Michigan cab (9½ *feet!*)—yet the 77 hp, four-wheel-drive machine *was never stopped!* Using a bucket-mounted V-plow, engineered by myself and the Township's mechanic, Sandor Arch, the Michigan and its one operator did more than any truck and its two operators.

Saves over $10/hr ripping asphalt

We find other jobs for the Michigan all the time! A homemade 10 ft crane boom lets us lift loads up to 7,000 lbs. Its bucket action is used to break concrete roads—average depth of slab, 6 or 7 inches. Scarifier teeth, permanently mounted to the bucket, rip asphalt. (Savings here are substantial—the Michigan alone does what formerly required a work crew of five men with air hammers, or several pieces of $10-per-hour rented equipment.)

In 3 minutes, loads 10 tons

Naturally, the Michigan loads trucks too. It handles all kinds of material. Stockpiled gravel. Windrowed snow. Sand. Cinders. Dirt. We figure its 1¼ yd bucket heaps a typical 10 ton truck in 5 or 6 passes, 2 to 3 minutes.

In 3 years, only 2 hours downtime

We've had the Michigan three years now. We've worked it 24 hours a day during bad blizzards . . . 40 hours a week most other times . . . *year around.* In all this time, we've lost *only two hours* of assigned work. The Michigan has proven powerful, easy-to-handle, low-cost (a tank of gas, 30 gallons, easily lasts a day), fast, dependable, versatile—the best year-round machine we've ever seen!

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY

Construction Machinery Division

CLARK EQUIPMENT

2495 Pipestone Road
Benton Harbor 24, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario